National Park Service
U.S. Department of the Interior



Rim of the Valley Corridor

Draft Special Resource Study and Environmental Assessment

April 2015

We are pleased to provide you with this copy of the draft *Rim of the Valley Corridor Special Resource Study and Environmental Assessment*.

The public comment period for this draft report will extend through June 30, 2015. We welcome your comments on the report, as well as your thoughts on how best to conserve the significance resources associated with the Rim of the Valley Corridor. Please sent your comments to:

National Park Service
Rim of the Valley Corridor Special Resource Study
570 W. Avenue 26 #175
Los Angeles, CA 90065
Email: pwr_rimofthevalley@nps.gov
Website: www.nps.gov/pwro/rimofthevalley

We also will be hosting a series of public meetings in various locations during during the comment period. At each of these meetings, we will present the key findings of the draft study report and environmental assessment, answer your questions, and provide opportunities for you to submit your comments. Check the study website: www.nps.gov/pwro/rimofthevalley for specific meeting dates, times, and locations.

A limited number of additional copies of this report are available from the address above. In addition, the Executive Summary and the full report are both posted on the website (see above for web address).

We appreciate your contributions to the study process so far, and we look forward to your comments on this draft report.

Photo credits
Front Cover: Oat Mountain area in the Santa Susana Mountains. Photo: Steve Matsuda.
Back Cover: Left: Burro Flats Painted Cave pictograph; Photo: NPS. Center: San Fernando Valley spineflower; Photo: Anthony Valois. Right: Filming at Paramount Ranch; Photo: NPS. Bottom: Mountain lion, known by researchers a P-22, in Griffith Park; Photo: © Steve Winter/National Geographic.
Front inside cover: View of the back of the Hollywood sign and the Los Angeles basin. Photo: NPS.
Back inside cover: Evening view of Arroyo Seco, San Rafael Hills, Verdugo Mountains and Griffith Park from the San Gabriel Mountains. Photo: © Eric Lowenbach.

Please keep in mind that your comments are public information. If individuals submitting comments request that their names and/or addresses be withheld from public disclosure, this will be honored to the extent allowable by law. Such requests must be stated prominently at the beginning of correspondence and comments. As always, the National Park Service will make available to public inspection all submissions from organizations or businesses and from persons identifying themselves as representatives or officials of organizations and businesses. Anonymous comments may not be considered.



RIM OF THE VALLEY CORRIDOR

Draft Special Resource Study and Environmental Assessment

APRIL 2015

Produced by the Pacific West Regional Office
Park Planning and Environmental Compliance
San Francisco, CA
National Park Service

U.S. Department of the Interior
Washington, D.C.

Rim of the Valley Corridor Special Resource Study & Environmental Assessment

Errata

November 2015

The following errata provide factual corrections, additions, and revisions to the *Rim of the Valley Corridor Draft Special Resource Study and Environmental Assessment (draft study/EA)*, dated April 2015. Changes to the draft study/EA, and references to the page number where the change has occurred are provided. The reader must have access to a copy of the draft study/EA in order to fully understand the changes.

Additional copies of this document and the April 2015 draft study/EA can be downloaded from the internet at www.nps.gov/pwro/rimofthevalley. Printed copies are also available on request from the address below.

Attn: Rim of the Valley Corridor Special Resource Study
National Park Service
333 Bush Street, Suite 500
San Francisco, CA 94104

INTRODUCTION

The following document includes errata, organized by chapter, that correct and add factual information to the April 2015 *Rim of the Valley Corridor Draft Special Resource Study and Environmental Assessment* (draft study/EA). Attach this document to the draft study/EA to comprise a full and complete record of the environmental impact analysis. The NPS did not identify any changes that would result in the determination of significant impacts. A Finding of No Significant Impact was completed for the study in Fall 2015.

Underlined text is new information added to the special resource study/EA, while text struck out is deleted.

Executive Summary

Page xxiv, left column, 1st paragraph after "Concept", 2nd sentence, revised as follows:
Existing parks such as Griffith Park, Hansen Dam, Sepulveda basin, Los Encinos State Historic Park, Debs Park, El Pueblo de Los Angeles Historical Monument, and Los Angeles State Historic Park would serve as major portals into the Rim of the Valley area.

Chapter 1: Introduction

Page 18, right column, 2nd paragraph, heading, revised as follows:
County of Los Angeles Department of Parks and Recreation - Santa Susana Mountains Trail Master Plan (~~underway~~2015)
The *Santa Susana Mountains Trail Master Plan* ~~will~~ promotes and encourages safe and enjoyable recreation trail opportunities for hikers, mountain bikers and equestrians. The plan ~~will~~ identify~~y~~ies connections to existing local, state, regional and national trail systems, as well as makes connections to existing trailheads and points of interest. This plan includes the Rim of the Valley Trail in the Los Angeles County portion of the Santa Susana Mountains and is an ~~proposed~~ amendment to the Los Angeles County General Plan.

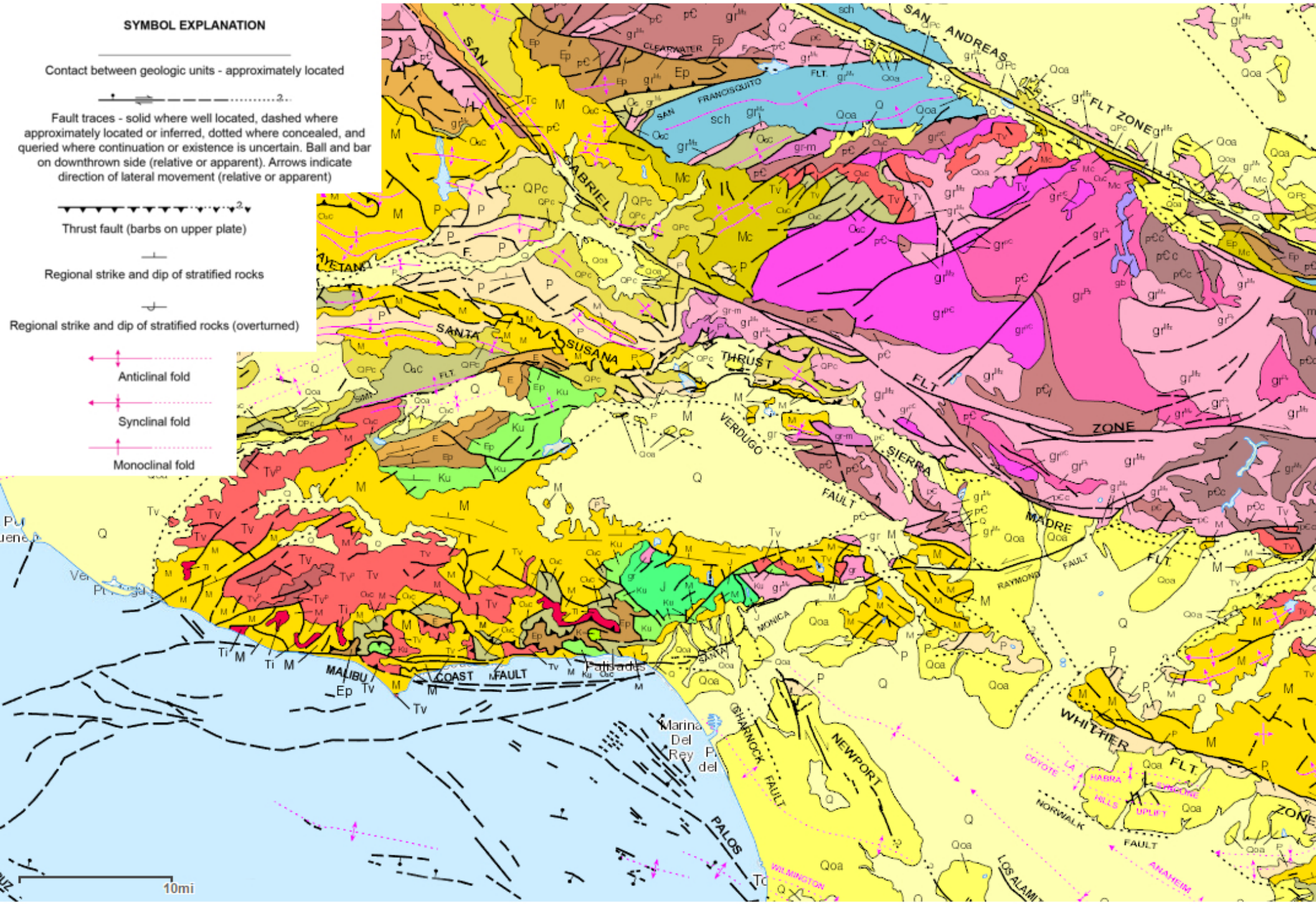
Chapter 2: Resource Description

Page 28 through 44, stylistic corrections as follows:
Capitalize "formation" when part of a name (e.g. Topanga Canyon Formation);
Capitalize "complex" when part of a name (e.g. Conejo Volcanic Complex);
Lowercase "late" and "early" when referring to geologic periods (e.g. late Paleocene);

Page 31, Figure 2-2 Geology:
This figure has been replaced with the California Geologic Map for the study area, originally created in 1977 and updated in 2010. California Geological Survey, Geologic Data Map No. 2, Compilation and Interpretation by: Charles W. Jennings (1977), Updated version by: Carlos Gutierrez, William Bryant, George Saucedo, and Chris Wills Graphics by: Milind Patel, Ellen Sander, Jim Thompson, Barbara Wanish and Milton Fonseca. Available online at**:**
http://www.conservation.ca.gov/cgs/cgs_history/Pages/2010_geologicmap.aspx

Page 34, left column, 2nd paragraph, last sentence, revised as follows:
The formations vary from deep to shallow marine, to terrestrial stream deposits or alluvium, due to changes in ocean levels and the location of the coast over time (~~*Figure 2-2: Geology*~~).

California Geological Survey, Geologic Data Map No. 2



California Geological Survey, Geologic Data Map No. 2

Compilation and Interpretation by: Charles W. Jennings (1977)

Updated version by: Carlos Gutierrez, William Bryant, George Saucedo, and Chris Wills

Graphics by: Milind Patel, Ellen Sander, Jim Thompson, Barbara Wanish and Milton Fonseca

DESCRIPTION OF MAP UNITS

QUATERNARY DEPOSITS

Qs	Extensive marine and nonmarine sand deposits, generally near the coast or desert playas
Q	Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated
Qls	Selected large landslides
Qg	Glacial till and moraines. Found at high elevations mostly in the Sierra Nevada and Klamath Mountains
Qoa	Older alluvium, lake, playa, and terrace deposits
QPc	Pleistocene and/or Pliocene sandstone, shale, and gravels deposits; mostly loosely consolidated

QUATERNARY VOLCANIC ROCKS

Qrv	Recent (Holocene) volcanic flow rocks; minor pyroclastic deposits
Qrv^{p}	Recent (Holocene) pyroclastic and volcanic mudflow deposits
Qv	Quaternary volcanic flow rocks; minor pyroclastic deposits
Qv^{p}	Quaternary pyroclastic and volcanic mudflow deposits

TERTIARY SEDIMENTARY ROCKS

Tc	Undivided Tertiary nonmarine sandstone, shale, conglomerate, breccia, and ancient lake deposits
P	Pliocene marine sandstone, siltstone, shale, and conglomerate; mostly moderately consolidated
M	Miocene marine sandstone, shale, siltstone, conglomerate, and breccia; moderately to well consolidated
Mc	Miocene nonmarine sandstone, shale, conglomerate, and fanglomerate; moderately to well consolidated
O_b	Oligocene marine sandstone, shale, and conglomerate; mostly well consolidated
O_bc	Oligocene nonmarine sandstone, shale, and conglomerate; mostly well consolidated
E	Eocene marine shale, sandstone, conglomerate, and minor limestone; mostly well consolidated
Ec	Eocene nonmarine sandstone, shale, and conglomerate; moderately to well consolidated
Ep	Paleocene marine sandstone, shale, and conglomerate; mostly well consolidated

TERTIARY VOLCANIC ROCKS

Tv	Tertiary volcanic flow rocks; minor pyroclastic deposits
Tv^{p}	Tertiary pyroclastic and volcanic mudflow deposits.
Ti	Tertiary intrusive rocks; mostly shallow (hypabyssal) plugs and dikes

TERTIARY PLUTONIC ROCKS

gr^{Cx}	Cenozoic (Tertiary) granitic rocks - quartz monzonite, quartz latite, and minor monzonite, granodiorite, and granite; found in the Kingston, Panamint, Amargosa, and Greenwater Ranges in southeastern California

MESOZOIC SEDIMENTARY AND METASEDIMENTARY ROCKS

TK	Sandstone, shale, and minor conglomerate in coastal belt of northwestern California. Previously considered Cretaceous, but now known to contain early Tertiary microfossils in places
K	Undivided Cretaceous sandstone, shale, and conglomerate; minor nonmarine rocks in Peninsular Ranges
Ku	Upper Cretaceous sandstone, shale, and conglomerate
Kl	Lower Cretaceous sandstone, shale, and conglomerate
KJf	Franciscan Complex: Cretaceous and Jurassic sandstone with smaller amounts of shale, chert, limestone, and conglomerate. Includes Franciscan melange, except where separated
KJf_m	Melange of fragmented and sheared Franciscan Complex rocks
KJf_s	Blueschist and semi-schist of Franciscan Complex
J	Jurassic shale and sandstone; minor conglomerate, chert, slate, limestone, and pyroclastic rocks
Tr	Triassic shale, conglomerate, limestone, dolomite, sandstone, slate, hornfels, and quartzite; minor pyroclastic rocks
sch	Schists of various types; mostly Paleozoic or Mesozoic age; some Precambrian
ls	Limestone, dolomite, and marble whose age is uncertain but probably Paleozoic or Mesozoic

MESOZOIC MIXED ROCKS

gr-m	Mesozoic to Precambrian granitic and metamorphic rocks; mostly gneiss and other metamorphic rocks injected by granitic rocks.

MESOZOIC METAVOLCANIC ROCKS

M_zv	Undivided Mesozoic volcanic and metavolcanic rocks. Andesite and rhyolite flow rocks, greenstone, volcanic breccia and other pyroclastic rocks; in part strongly metamorphosed. Includes volcanic rocks of Franciscan Complex: basaltic pillow lava, diabase, greenstone, and minor pyroclastic rocks
mv	Undivided pre-Cenozoic metavolcanic rocks. Includes latite, dacite, tuff, and greenstone; commonly schistose

MESOZOIC PLUTONIC ROCKS

gr^{Mz}	Mesozoic granite, quartz monzonite, granodiorite, and quartz diorite
um	Ultramafic rocks, mostly serpentine. Minor peridotite, gabbro, and diabase; chiefly Mesozoic
gb	Gabbro and dark dioritic rocks; chiefly Mesozoic
gr	Undated granitic rocks

PALEOZOIC SEDIMENTARY AND METASEDIMENTARY ROCKS

P_z	Undivided Paleozoic metasedimentary rocks. Includes slate, sandstone, shale, chert, conglomerate, limestone, dolomite, marble, phyllite, schist, hornfels, and quartzite
Pm	Permian shale, conglomerate, limestone, dolomite, sandstone, slate, hornfels, and quartzite; minor pyroclastic rocks
C	Carboniferous shale, sandstone, conglomerate, limestone, dolomite, chert, hornfels, marble, and quartzite; in part pyroclastic rocks
D	Devonian limestone, dolomite, sandstone, and shale; in part tuffaceous
SO	Silurian to Ordovician sandstone, shale, conglomerate, chert, slate, quartzite, hornfels, marble, dolomite, and phyllite; some greenstone
€	Cambrian sandstone, shale, limestone, dolomite, chert, quartzite, and phyllite; includes some rocks that are possibly Precambrian

PALEOZOIC MIXED ROCKS

m	Undivided pre-Cenozoic metasedimentary and metavolcanic rocks of great variety. Mostly slate, quartzite, hornfels, chert, phyllite, mylonite, schist, gneiss, and minor marble

PALEOZOIC METAVOLCANIC ROCKS

P_zv	Undivided Paleozoic metavolcanic rocks. Mostly flows, breccia, and tuff; includes greenstone, diabase, and pillow lavas; minor interbedded sedimentary rocks

PALEOZOIC PLUTONIC ROCKS

gr^{Pz}	Paleozoic and Permo-Triassic granitic rocks in the San Gabriel and Klamath Mountains

PRECAMBRIAN ROCKS

pC	Conglomerate, shale, sandstone, limestone, dolomite, marble, gneiss, hornfels, and quartzite; may be Paleozoic in part
pCc	Complex of Pre-cambrian igneous and metamorphic rocks. Mostly gneiss and schist intruded by igneous rocks; may be Mesozoic in part
gr^{pC}	Precambrian granite, syenite, anorthosite, and gabbroic rocks in the San Gabriel Mountains; also various Precambrian plutonic rocks elsewhere in southeastern California

Page 36, right column, 3rd paragraph, 4th sentence revised as follows:
Cenozoic beds, including the fossiliferous and terrestrial Mint and Tick Canyon Formations, are located only along the range's western and northern margins.

Page 37, left column, 2nd paragraph, revised as follows:
In the southwest corner of the mountains, the Tujunga Terrane, names for rocks exposed in lower Tujunga Canyon, contains basement rocks such as gneiss~~es,~~ late quartz diorite, and granodiorite-quartz, as well as metasedimentary rocks associated with the pre-Triassic Placerita Formation.

Page 39, left column, 2nd paragraph, 1st sentence, revised as follows:
Generally, the Rim of the Valley Corridor study area is defined on the south by the Santa Monica-Hollywood-Raymond-Sierra Madre ~~F~~fault ~~Z~~zones.

Page 39, left column, 4th paragraph, 2nd sentence, revised as follows: Activity on this fault is ~~very r~~Recent (Norris and Webb 1990).

Page 39, left column, last paragraph, 1st sentence, revised as follows:
In addition to these mapped faults, the region contains blind thrust faults~~.~~, ~~Blind thrust faults are~~ shallow-dipping reverse faults that lie entirely below the earth's surface.

Page 39, last sentence of left column continuing into 2nd column, revised as follows:
Although many of the faults ~~remain unknown~~ are poorly constrained and understood, two regional examples are the Puente Hills Blind Thrust, which runs underneath downtown Los Angeles and was the source of the 1987 Whittier Narrows earthquake, and the Northridge Thrust Fault, which ruptured in the 1994 Northridge earthquake.

Page 41, left column, 4th paragraph, revised as follows:
Native Americans used seeps of asphalt that oozed to the surface on the north side of the Santa Susana Mountains from Pico Canyon to Placerita Canyon. The oldest producing oil field in California is in Pico Canyon near Newhall. Oil was collected here as early as 1850 (Norris and Webb 1990). In the 1920s, Los Angeles County was the world's fifth largest oil producer. Presently, oil production is less prevalent than it was almost a century ago, although ~~some~~ oil and natural gas wells are still in production, primarily in the Santa Susana Mountains. While many older mines and oil wells have been abandoned, recent oil price increases have prompted drilling of new wells and reopening of some idle wells (California Department of Conservation 2009).

In 2014, the study area contained 15 active oil and gas fields, as designated by the California Division of Oil ,Gas and Geothermal Resources. However, not all of the fields have operating wells in the study area (Department of Conservation 2015a), *see Table 2-2A: Oil and Gas Production for 2014* and *Figure 2-2A: Oil Fields and Active Wells*. In 2014, active fields produced approximately 1,726,000 barrels of oil and 1,136,000 Mcf2 of gas in 2014 (Department of Conservation 2015b). In addition, natural gas is stored subsurface in gaps in the rock layers where oil was previously extracted. The 3,600 acre Aliso Canyon Storage Facility, north of Porter Ranch, is one of the largest of these storage facilities in the country. Several oil and gas companies own subsurface mineral rights in the study area, primarily in the Santa Susana Mountains.

Table 2-2A: Oil and Gas Production for 2014

Oil Field	Location	Field Status	Active Wells in Study Area	Oil (barrels)	Net Gas withdrawn (thousand cubic feet)
Los Angeles City	Los Angeles River	Active	No	1,216	0
Torrey Canyon	Santa Susana Mtns	Active	Yes	118,353	171,660
Oakridge	Santa Susana Mtns	Active	Yes	147,570	89,147
Santa Susana	Santa Susana Mtns	Active	Yes	15,871	102,575
Tapo Canyon, South	Santa Susana Mtns	Active	Yes	9,283	1,675
Big Mountain	Santa Susana Mtns	Active	Yes	28,992	115,191
Oak Park	Santa Susana Mtns	Active	Yes	17,116	6,088
Simi	Santa Susana Mtns	Active	Yes	0	0
Tapo, North	Santa Susana Mtns	Active	Yes	4,580	0
Placerita	Santa Susana Mtns	Active	Yes	898,754	0
Newhall-Potrero	Santa Susana Mtns	Active	Yes	113,963	189,731
Newhall	Santa Susana Mtns	Active	Yes	2,676	0
Cascade	Santa Susana Mtns	Active	Yes	132,485	193,977
Oat Mountain	Santa Susana Mtns	Active	Yes	83,680	84,921
Aliso Canyon	Santa Susana Mtns	Active	Yes	151,300	180,564
Total				**1,725,839**	**1,135,529**
Source: Department of Conservation 2015b					

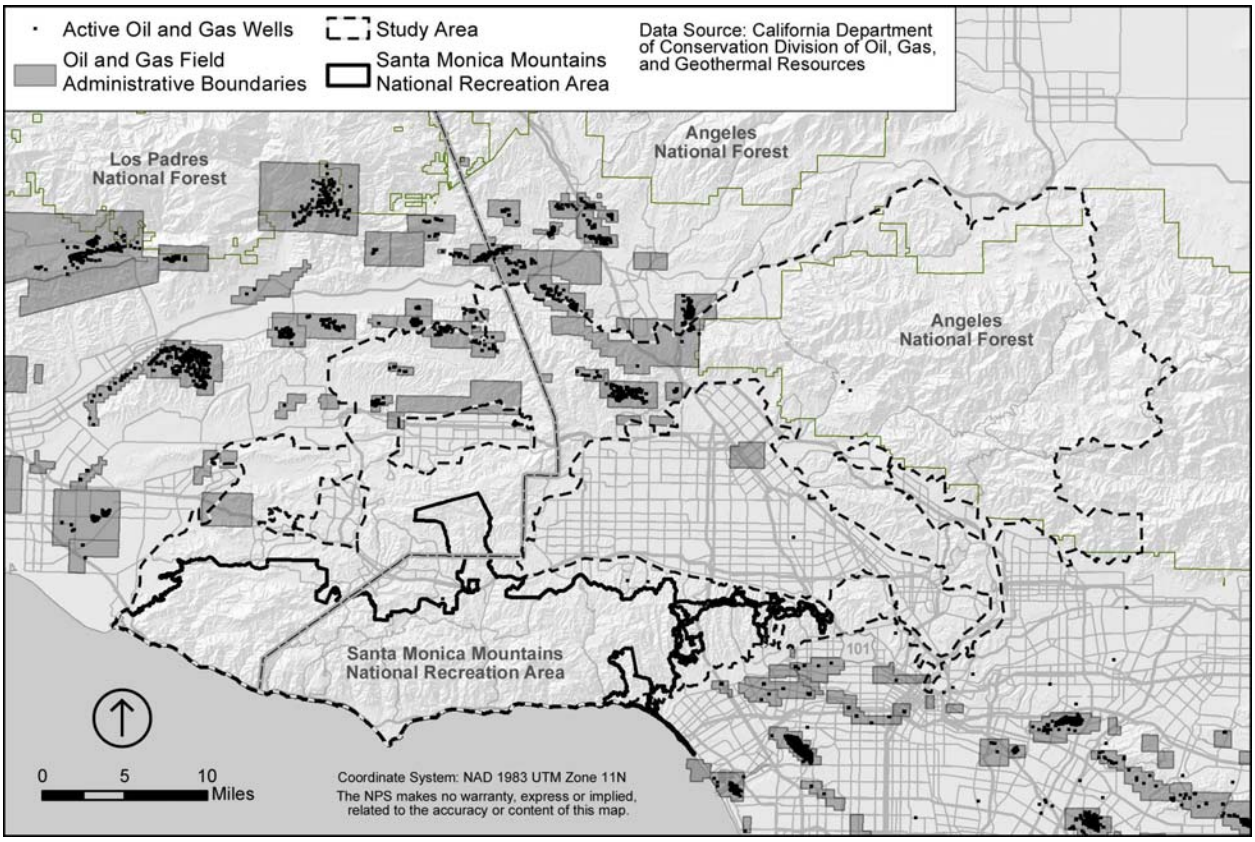


Figure 2-2A: Oil Fields and Active Wells

Page 42, 2nd column, 3rd paragraph, 2nd sentence, revised as follows:
In the Simi Hills outside SMMNRA, the Las Virgenes Sandstone ~~formation~~ contains some logs, clams, snails, and burrows (Parker 1983a and 1938b, Saul 1983, Squires 1997).

Page 44, left column, 2nd paragraph, 3rd sentence, revised as follows:
The Mint Canyon Formation includes vertebrate fossils such as ~~Merychippus, Hipparion, Alticamelus,~~ *Merychippus, Hipparion, Alticamelus,* rhinoceroses, antelopes, and carnivores (Mount 1971).

Page 44, left column, 4th paragraph, revised as follows:
The study area contains portions of ~~four~~ five major watersheds: the Santa Clara River watershed, the Calleguas Creek watershed, the Santa Monica Bay watershed, ~~and~~ the Los Angeles River watershed, and small portions of the San Gabriel River Watershed. (Figure 2-3: Major Watersheds). The Rio Hondo, a distributary of the San Gabriel River, branches from the river just below Santa Fe Dam to the east of the study area and flows westward to the Whittier Narrows area where portions of the flow from the upper San Gabriel River are conveyed to the Rio Hondo, which then joins the Los Angeles River. For the purposes of this study, the Rio Hondo is included as part of the description of the Los Angeles River Watershed (LADPW 2006b).

Page 48, left column, 1st paragraph, revised as follows:
The Rio Hondo has now been engineered as a permanent tributary to the Los Angeles River for flood control, while continuing to provide a hydrological connection between the two rivers (LADPW 2006a; California Coastal Conservancy 2001).

Page 49, right column, 2nd paragraph, revised as follows:
The Metropolitan Water District of Southern California (MWD), a consortium of 26 cities and water districts, functions as a water wholesaler that bridges the gap between local water supplies and demand. MWD receives water via the Colorado River Aqueduct and the State Water Project's California Aqueduct, the latter of which conveys water from northern California. As part of their imported water infrastructure, MWD operates eight water supply pipelines in and around the study area, and the Joseph P. Jensen Water Treatment Plant in the northern San Fernando Valley.

Page 61, left column, 3rd paragraph, revised as follows:
Vernal pools are a distinctive type of seasonal freshwater wetland which are extremely rare in the area. ~~The nearest verified vernal pools are just outside the study area on the northern rim of the Upper Santa Clara River Valley (at Cruzan Mesa and Plum Canyon). However, there are likely unrecognized ephemeral pools within the study area in suitable soil types. For example, there is at least one small documented seasonal pond with typical vernal pool characteristics in the Golden Valley Ranch portion of the upper Placerita-Sand Canyon watershed on the south side of the Upper Santa Clara River Valley. This small pool is surrounded by coastal sage scrub, with a band of native needlegrass and melic grass (*Melica* spp.) on its fringes. The Golden Valley pool supports vernal pool fairy shrimp, Riverside fairy shrimp and western spadefoot toad (Juhasz 2011, LADRP 2012a).~~ They are notable and highly valued as habitat for a number of rare and protected species, including vernal pool fairy shrimp, Riverside fairy shrimp, western spadefoot toad, and California Orcutt grass. Vernal pools have been documented in the study area at Tierra Rejada, Santa Clarita (end of Via Princessa), and Golden Valley Ranch. It is likely that there are additional unrecognized or undocumented vernal pools in the study area in suitable soil types and terrain (Juhasz 2011, LADRP 2012a, USFWS 2011e).

Page 76, Figure 2-11 title, revised as follows:
Figure 2-11: ~~Ethnographic Native American Territories~~ – Linguistics: Regions in which the languages of California were spoken prior to European contact.

Page 76, left column, last paragraph, last sentence, revised as follows:
The study area lies within portions of the traditional territory of the Chumash, the western Tongva/Gabrielino, the Tataviam, and the Serrano as indicated in *Figure 2-11: ~~Ethnographic Native American Territories~~ Linguistics: Regions in which the languages of California were spoken prior to European contact.* (Heizer and Sturtevant 1981, USFS 1986, King and Parsons 2010).

Page 77, left column, 3rd paragraph, 4th sentence, revised as follows:
At the time of contact, the Tataviam population was estimated at ~~probably~~ less than 1,000 people by King and Blackburn (1978), while Johnson (2006) estimated approximately 3,000 people. However, these numbers may be low as Mission San Fernando Rey de España and Mission San Gabriel records and other historical documents often failed to distinguish the Tataviam as an individual group (Gulley 2015).

Page 77, the document incorporates the following information provided by the Fernandeño Tataviam Band of Mission Indians by reference. The information is to be inserted in the left column, after the 3rd paragraph:

Fernandeño Tataviam Band of Mission Indians: Ethnographic Excerpt
The information presented in this ethnography is based off the interpretations of the present-day enrolled citizens, elders, and the tribal leadership of the Femandeño Tataviam Band of Mission Indians constructed off data gathered by anthropologists, archaeologists, and linguists.

Fernandeño: Regional Terms
"Fernandeño" (or " Fernandiño") is a Spanish regional term representing the people of four diverse territories enslaved during the Mission San Fernando period. J.P. Harrington archives Fernandeno Takic terms, one of the many languages spoken among the Indians of Mission San Fernando, for the Four related, yet culturally diverse, territories prior to the Mission period. Using Pasekivitam. the people of the villages of San Fernando, the Mission, and the basin of the valley, as a central point of reference would position Tataviam as the people of the region north of Pasekivitam, Simivitam as the western people inhabiting Simi Valley in territories south of Tataviam, and the Vanyume as the most eastern groups encompassing Antelope Valley (Harrington 1916 Reel # 106). The Tataviam, Pasekivitam, and Vanyume maintained slightly distinct Takic languages, while the people of Simi Valley and coastal areas were members of the Chumashan language. There are several alternative names that represent ethnic (tribal) perspectives For the words recorded by both the Spanish priests and Harrington, but the general rule stands with Four important Takic sufixes: -vit. -pet. -bit, or - bet refer to one person or lineage, -am is plural and can convert one person (-vit) to multiple people (-vitam), and -nga is a locative reference. Language types and marital patterns did not determine political or national organization among the pre-mission Fernandeños. They exercised power over territory, self-government, a judicial system, and upheld a network of' social, economic and political ties to other lineages over an extensive area. The lineages continued as the major form of social and political organization through the Mission period, and are the primary form of indigenous organization among the present-day descendants of the Fernandeños.

Fernandeno and Gabrieleno: The Difference
Although the Fernandeño and Gabrieleño are linguistically related, they represent two geographical areas that shall not be confused, or interchanged, with one another. Sivavitam, the people of Los Angeles Basin, are known as the Gabrieleños during the Mission period. The people of Mission San Gabriel, Gabrieleños, referred to the Fernandeños as Pavasikwar, which exemplifies the separate native identities associated with the two post-Mission era names. Additionally, the Fernandeños referred to the Gabrieleños inhabiting areas further east of the Los Angeles Basin as Komivitam. or the people in the Eastern portion of San Gabriel Valley, which further established a line between the two mission-associated regional terminologies.

Page 79, left photo caption, 2nd sentence, revised as follows:
They include the only depictions in Chumash ~~art~~ style of human figures in profile and of mounted horsemen.

Page 79, right photo caption, 2nd sentence, revised as follows:
Burro Flats lies within the traditional territory of the Chumash and Tataviam.

Page 79, left column, 1st paragraph, 5th sentence, revised as follows:
Located in the San Gabriel Mountains foothills, just south of the Angeles National Forest, the Tataviam village of Tujunga covers a larger area, both above and below the Hansen Dam and has potential for scientific discovery (CA-LAN-167).

Page 79, left column, last paragraph, 3rd sentence. Revised as follows:
The Santa Susana Pass is the junction between the Simi Hills and the Santa Susana Mountains and served as a transition zone between the territories of Chumash, Gabrieleño/Tongva, and the ~~Tatavium~~ Tataviam (CSP 2005).

Page 79, right column, 1st paragraph, 5th sentence, revised as follows:
A village site uncovered in the park is thought to be the Tongva/Tataviam village of Momonga (CA-LAN-449) (Mealy and Brodie 2005).

Page 80, left column, 1st paragraph, revised as follows:
". . . outcrop. The site appears to have included at least some astronomical significance, since it is aligned with the solstice. Burro Flats lies within the traditional territory of the Chumash and Tataviam, whose interest in astronomical phenomena was observed and recorded by ethnographer J.P. Harrington. The site was also noted for its astronomical significance in E.C. Krupp's E*choes of the Ancient Skies: The Astronomy of Lost Civilizations*. The coincidence of this prehistoric astronomical site with the location of NASA's Santa Susana Field Laboratory test areas which helped to develop the earliest manned and unmanned exploration of deep space is notable and should be the subject of both preservation and interpretive efforts. Burro Flats was listed in the National Register of Historic Places in 1976.

The Burro Flats Painted Cave area has been recognized as an Indian Sacred Site under Executive Order 13007 by the Santa Ynez Band of Chumash Indians for its importance to understanding and appreciation of the site's importance for religious practices of the Chumash and other neighboring tribes. The Native American Heritage Commission has also identified the entire Santa Susana Field Laboratory property as a sacred site at the request of the Santa Ynez Band of Chumash Indians.

Page 80, left column, 2nd paragraph, 1st sentence, revised as follows:
Although just outside of the study area boundary, it should be noted that at the northern base of the Santa Susana Mountains, a Tataviam site known as Bowers Cave near Val Verde reportedly yielded a diverse assemblage of American Indian religious and ceremonial artifacts following its discovery in 1884 (City of Santa Clarita 2011).

Page 80, left column, 2nd paragraph, 2nd sentence, revised as follows:
Also of note are ~~Tatavium~~ Tataviam rock art examples in Vasquez Rocks County Park, located just outside of the study area near Soledad basin.

Page 84, left column, 3rd paragraph, add after last sentence:
Supplied by water from the Los Angeles River and zanjas, the production and trade of grapes and wine was also an important industry during the Mexican Period.

Page 85, left photo caption, 1st sentence, revised as follows:
The site of Rancho Los Encinos includes a natural spring that provided a year-round source of water for the ancient village of Siutcanga, home to the Tongva and Tataviam people.

Page 86, right column, 1st paragraph, add new paragraph after last sentence:
The production of grapes and wine continued to be an important component of the agricultural economy until vines were eventually weakened and killed by Pierce's disease beginning in the early 1880s. Vineyards were then replaced with other types of orchard trees such as citrus. Today, 150 year-old vines are still present at the Avila Adobe at El Pueblo de Los Angeles Virbila 2015).

Page 97, right column, 3rd paragraph, revised as follows:
In 1947, North American Aviation (later Rocketdyne) selected a site in the Simi Hills for construction of large rocket-testing stands. The first test stand was completed in 1949. It was located within a natural, bowl-shaped depression of the rocky topography of the Simi Hills in what was referred to as Area I. Company histories describe "Santa Susana's Bowl Area" (also known as Area I) as the first liquid-fuel, high-thrust rocket engine test facility in the continental United States with multiple, permanent test stands. It would be the precursor of the more extensive complex of test facilities built by the Air Force in a separate area of the Santa Susana Field Laboratory site (Area II).

Development of the Air Force's next generation of intermediate and long-range guided missiles in Area II (the Thor and the Atlas) dated from 1954 and was centered in Southern California, with North American Aviation chosen to be the major contractor. To handle its additional responsibilities, North American Aviation established Rocketdyne as a separate company division devoted entirely to the missile program. A new complex would include four clusters of three Vertical Test Stands—twelve in all—each with accompanying blockhouses for observation and a workshop facility, or Component Test Laboratory, as well as associated utilities. These sites were given the sequential names Alfa, Bravo, Coca, and Delta. All of the new facilities would be operated under contract with the Air Force.

Page 98, left column, 2nd paragraph, revised as follows:
By 1969, NASA had begun planning on the Space Shuttle. In 1971, it awarded Rocketdyne the contract to develop the Space Shuttle Main Engine. The engine was developed and constructed at Rocketdyne's Canoga Park plant (AFP 56) while static fire testing was conducted at the SSFL on specially-modified vertical test stands at the Coca site. Static fire testing would continue at SSFL throughout the 1980s and 1990s in support of NASA's space program, but during the following decade the test facilities at SSFL were gradually deactivated. The last engine tests were conducted at the Alfa site in 2006.

Page 98, right column, 2nd paragraph, last sentence revised as follows:
~~In 1959, the SRE may have earned a more dubious distinction by becoming the first civilian reactor to suffer a serious accident when more than a third of its fuel rods overheated and melted through their protective cladding, releasing a plume of radioactive gas into the atmosphere (Lochbaum 2006).~~ In 1959, the SRE experienced a core damage accident as a result of coolant flow blockage within the reactor. There has been considerable controversy and concern in surrounding communities about the release of radioactive gases as a result of the accident. The Department of Energy has published recent independent studies on its website that confirmed Boeing's initial findings that only small quantities of noble gases were released into the environment. The Sodium Reactor Experiment was shut down in 1964, and the building which housed the reactor was demolished in 1999 (U.S. Department of Energy 2015).

Page 115, left column, 1st bullet, revised as follows:
The Resource Conservation District (RCD) of the Santa Monica Mountains offers programs for grades K-6 on Chumash cultural and natural history at Topanga State Park, and with funding through San Fernando Valley Audubon Society, co-administers science programming for grades 4-6 on freshwater lake habitats at Sepulveda Basin Wildlife Reserve and Malibu Lagoon.

Page 115, left column, 3rd bullet, revised as follows:
~~The Children's Nature Institute offers a regular schedule of Outreach Field Discovery trips to SMMNRA.~~

Chapter 3: New Park Unit Criteria Analysis

Page 140, right column, 2nd paragraph, 3rd sentence, revised as follows:
Of particular note is the area's Chumash style rock art, considered to be some of the most interesting and spectacular in the United States (Heizer and Sturtevant 1981).

Page 141, photo caption, revised as follows:
One of the largest Native American Indian populations in the world, representing virtually every tribe, lives within easy access of the study area. Satwiwa Native American Culture Center in SMMNRA serves as a destination for a broad range of American Indian groups from across the nation. Satwiwa is a learning center for all people to share traditional and contemporary indigenous lifeways. Shown is late Chumash leader, Charlie Cooke, with a child. Photo: NPS.

Page 180, left column, 2nd paragraph, 2nd sentence, revised as follows:
As described in *Chapter 2: Resource Description,* the Santa Susana Mountains area is largely unsurveyed for archeological resources but served as a transition zone between the territories of Chumash, Gabrieleño/ Tongva, and the ~~Tatavium~~ Tataviam.

Page 185, right column, after the first paragraph, revised as follows:
Within this category of land use are also botanical gardens and cemeteries. While not traditionally considered open space, larger cemeteries and memorial parks are typically open, landscaped areas. Although typically in under private management, there are some examples of cemeteries being used by communities for recreational uses such as walking on dedicated pathways, as long as such use is consistent with cemetery rules and guidelines.

The largest cemetery within the study area is the 444-acre Forest Lawn memorial-park in the Hollywood Hills. This memorial-park is a dedicated cemetery that is largely developed and under continued operation. State law requires that the property must be held, occupied, and used exclusively for a cemetery and for cemetery purposes and cemetery development.

Page 185, right column, 3rd paragraph, last sentence, revised as follows:
Some gravel mining occurs within the Upper Santa Clara River area at the base of the San Gabriel Mountains, in the Conejo Mountain area, and in the Santa Susana Mountains.

Page 185, right column, after last paragraph, revised as follows:
Water and power transmission facilities include sixteen (16) Southern California Edison 66 kV substations, two 220/66 kV substations, one 500/220 kV substation, and fifty (50) distribution circuits. The study area also contains designated utility corridors to allow for future transmission infrastructure to be built out in certain areas.

A high speed rail corridor near the study area (from Los Angeles to Palmdale) has been identified in the 2005 Final Program Environmental Impact Report/Environmental Impact Statements for the Proposed California High Speed Train System (2005). All of the proposed Palmdale to Burbank and Burbank to Los Angeles high-speed rail alternatives traverse the study area.

Chapter 4: Boundary Adjustment Evaluation

Page 211, left column, 2nd bullet, 1st sentence, revised as follows:

The north side of the Santa Susana Mountains is also influenced by a convergence of montane and desert influences that create rare and unusual plant communities, including a pure stand of blue elderberry and some ancient relict plant communities (e.g. bigcone Douglas-fir and canyon live oak).

Chapter 5: Alternatives

Page 249, left column, 4th paragraph, 2nd sentence, revised as follows:

Existing parks such as Griffith Park, Hansen Dam, Sepulveda basin, Los Encinos State Historic Park, Debs Park, El Pueblo de Los Angeles Historical Monument, and Los Angeles State Historic Park would serve as major portals into the Rim of the Valley area.

Chapter 6: Environmental Consequences

Page 276, right column, 1st paragraph, after last bullet, revised to add:

- Scholl Canyon Landfill Expansion
- Proposed California High Speed Rail
- Various development proposals considered by local communities (e.g. Newhall Ranch, Canyon Hills, Upper Browns Canyon/Hidden Creek Estates, Canyon Park Homes, Big Tujunga Canyon.

Page 279, left column, last paragraph, "Native American Indian Sacred Sites," revised as follows:

To comply with the American Indian Religious Freedom Act, federal agencies must consider the effects of their actions on American Indian traditional religious practices. ~~Based on analysis, there are no known traditional or religious use areas within the study area. In addition, there are no known Indian sacred sites that would require compliance with Executive Order 13007: Indian Sacred Sites (61 FR 26771, 42 USC 1996).~~ During review of the draft study report, the Santa Ynez Band of Chumash Indians notified the National Park Service that the tribe designated the NASA portion of the Santa Susana Field Laboratory site that contains the Burro Flats Painted Cave (National Register of Historic Places #76000539) as an Indian sacred site, in accordance with Executive Order (EO) 13007 (Federal Register 1996) and that the Native American Heritage Commission (NAHC) designated the entire 2,000-acre Santa Susana Field Laboratory property as an Indian Sacred Site at the request of the Santa Ynez Band of Indians. The definition of an Indian "Sacred Site" according to the EO is: Any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site" (Federal Register 1996).

This topic has been dismissed because inclusion of the Santa Susana Field Laboratory site within the boundary of Santa Monica Mountains National Recreation Area would not have any

adverse effects on this site. Any potential effects would be beneficial as the selected alternative specifically states that "Many sites within the study area are important to Native American tribes and other organizations. Tribes, organizations and others could continue to work with public and private landowners and managers to protect sacred sites and archeological resources, and to obtain access or ownership of important sites for ceremonial, interpretive, and educational purposes."

Page 289, right column, 3rd paragraph, 8th sentence, revised as follows:
Replace use of "E. coli" with "fecal coliform" and add the following sentence: The amended water quality objective now utilizes E. coli rather than fecal coliform as an indicator when assessing protection of the REC-1 beneficial use and states the single sample E. coli density shall not exceed 235/100 ml or 126/ 100 ml as a geometric mean of multiple samples.

Page 290, right column, 1st paragraph, revised as follows:
Several of these pollutants, including metals, pesticides and other organics can bioaccumulate in organisms, causing more harm to animals at the top of the food chain than to those lower in the food chain (LADPW 2006a).

Page 291, right column, 4th paragraph, revised as follows:
In addition, the Greater Los Angeles County Region Integrated Regional Water Management Plan provides funding for projects that meet its goals, including optimizing local water resources to reduce reliance on imported water, improving the quality of runoff to meet beneficial use requirements for receiving water bodies, increasing the number of wetlands, aquatic buffers and wildlife linkages, increasing watershed friendly open space, and reducing flood risk (LADPW 2006a).

Page 292, right column, 4th paragraph, after 3rd sentence, revised as follows:
Impacts from climate change may also increase or extend droughts and alter temperature and rainfall patterns.

Page 307, right column, first paragraph, 1st sentence, revised as follows:
Lands within the study area lie within the traditional territories of the Chumash, the Tongva/Gabrieliño, the Serrano, and the ~~Tatavium~~ Tataviam.

Page 307, right column, 3rd paragraph, 2nd sentence, revised as follows:
Known sites within SMMNRA include spectacular Chumash style pictographs, village sites representing over 3,000 years of human use, and the only known site where a Clovis point has reportedly been found on the west coast (Stickel 2006).

Page 308, right column, 1st paragraph, 1st sentence, revised as follows:
Lands within the study area lie within the traditional territories of the Chumash, the Tongva/Gabrielino, the Serrano, and the ~~Tatavium~~ Tataviam.

Page 308, right column, 3rd paragraph, last sentence, revised as follows:
For instance, Burro Flats (Chumash and Tongva/ Gabrielino) and the Tujunga village site (Hansen Dam—Serrano/Tataviam) would be within the boundary.

Page 310, right column, 1st paragraph, 2nd sentence, revised as follows:
There could be opportunities to study a wide range of human interest and significant events important to the development of the oil industry (development of Union/Standard Oil in Newhall, Santa Clarita and Santa Paula), the aerospace industry (Boeing, Rocketdyne and NASA's Jet

Propulsion Laboratory in Simi Valley/Chatsworth and Pasadena), the film industry (numerous film settings and studios), archeological and ethnographic information about the Chumash, ~~Tatavium~~ Tataviam, Tongva/ Gabrielino, and Serrano as well as stories of the first African American woman to own land in California (Biddie Mason), and even more modern development associated with the development of conservation biology and firefighting techniques (as these relate to the study area).

Page 332, Table 6-11, 2nd row, 3rd column, last sentence, revised as follows:
Protecting lands related to the transition between the Chumash and Tongva/Gabrielino, and new sites related to the Serrano and Tataviam, could improve understanding of archeological resources.

Chapter 7: Consultation and Coordination

Page 339, both columns, revise to include the following names to the list of *Experts, Scholars, and National Park Service Professionals Consulted or Contributed Information* (alphabetical order):

- Barbara Blankenship, Acquisition Specialist, City of Santa Clarita
- Joe Edmiston, Executive Director, Santa Monica Mountains Conservancy
- Craig Sap, Superintendent, Angeles District, California State Parks
- Ronald P. Schafer, Superintendent, Angeles District, California State Parks
- Rorie Skei, Deputy Executive Director, Santa Monica Mountains Conservancy

Table 7-1, left column, 1st cell, revised as follows:
~~All tribal governments and organizations sent a consultation letter in 2011 (see previous section) are also being sent a copy of the draft special resource study.~~

Federally Recognized Tribes	Santa Ynez Band of Chumash Mission Indians
	San Manuel Band of Mission Indians
	Morongo Band of Mission Indians
	Pala Band of Mission Indians
Other Tribal Organizations	Barbareño/Ventureño Band of Mission Indians
	Coastal Band of the Chumash Nation
	Fernandeño Tataviam Band of Mission Indians
	Gabrieleño/Tongva San Gabriel Band of Mission Indians
	Gabrieleño Band of Mission Indians
	Gabrielino Tongva Indians of California Tribal Council
	Gabrielino/Tongva Nation
	Gabrielino-Tongva Tribe
	Kitanemuk & Yowlumne Tejon Indians
	Los Angeles City/County Native American Indian Commission
	San Fernando Band of Mission Indians
	San Luis Obispo County Chumash Council
	Tongva Ancestral Territorial Tribal Nation

The draft study was also sent to a number of Native American individuals suggested by the Native American Heritage Commission.

Appendices

Page 356, Table D-4: Water Reclamation Plants in the Study Area, Column 1, Row 1, revised as follows:

~~Los Angeles Department of Water and Power~~ City of Los Angeles, Department of Sanitation

Page 360, left column, 1st paragraph, 2nd sentence, revised as follows:

Within the study area, this species has primarily been observed in the San Gabriel Foothills, the Verdugo Mountains, Sepulveda Basin, and Griffith Park.

References

Page 406, after California Department of Conservation, revised as follows:

2015a Well Finder Data. Available online at: http://www.conservation.ca.gov/dog/Pages/Wellfinder.aspx

2015b 2014 *Preliminary Report of California Oil and Gas Production Statistics (Issued July 2015).* Available online at: http://www.conservation.ca.gov/dog/pubs_stats/annual_reports/pages/annual_reports.aspx

Page 411, before Feinberg, Marjorie Shafton, revised as follows:

Federal Register

1996 Presidential Documents. Executive Order 13007 of May 24, 1996. Indian Sacred Sites. Federal Register. Volume 61. Number 104. May 29.

Page 412, before Gumprecht, Blake, revised as follows:

Gulley, Caitlin, Tribal Historic and Cultural Preservation Officer, Fernandeño Tataviam Band of Mission Indians

2015 Personal communication with study team members: Anne Dove, Project Manager; Gary Brown,Santa Monica Mountains National Recreation Area; Margie Steigerwald, Santa Monica Mountains National Recreation Area; and Barbara Butler Baunsgard, Landscape Architect, Pacific West Regional Office on June 25, 2015.

Page 414, 9th paragraph, revised as follows:

King, Chester and Thomas C. Blackburn

1978 "~~Tatavium~~ Tataviam." In R. Heizer, ed. *Handbook of North American Indians. Vol. 8*. Washington DC: Smithsonian Institution. pp.535-537.

Page 416 [LADPW], revised as follows:

2006a Greater Los Angeles County Region Integrated Resource Water Management Plan. Available on the Internet at <http://www.ladpw.org/wmd/irwmp/>

2006b San Gabriel River Master Plan: Final Program Environmental Impact Report. Available on the Internet at <http://www.ladpw.org/wmd/watershed/sg/mp/peir.cfm>

Page 424, Soza et al., revised as follows:

~~Soza, V.L., L. Gross, S. Boyd, N. Fraga~~

~~in press "Vascular Flora of the Verdugo Mountains and San Rafael Hills, Los Angeles County, California." Crossoma.~~

Soza, V.L., L. Gross, S. Boyd, and N. Fraga.
2013. Vascular Flora of the Verdugo Mountains and San Rafael Hills, Los Angeles County, California. *Crossosoma* 39 (1 & 2): 1-140.

Page 427, before [USFWS] U.S. Fish and Wildlife Service, revised as follows:
U.S. Department of Energy.
2015 *The SRE Accident*. Available on the Internet at: <http://www.etec.energy.gov/Operations/Major_Operations/SRE_Accident.html> Accessed on October 14, 2015.

Page 427, after [USFWS] U.S. Fish and Wildlife Service 2011d, revised as follows:
2011e *Orcuttia californica (California Orcutt grass) 5-Year Review: Summary and Evaluation.* Available on the Internet at: <http://www.fws.gov/carlsbad/SpeciesStatusList/5YR/20110311_5YR_ORCA.pdf> Accessed on October 19. 2015.

Page 429, before Wilcove et. al., revised as follows:
Virbila, S. Irene
2015 "What to do with grapes from 150-year-old vines at Olvera Street? Make wine, of course." *Los Angeles Times*, September 15, 2015.

Abstract

Rim of the Valley Corridor
Draft Special Resource Study and Environmental Assessment
April 2015

Purpose and Need

The Consolidated Natural Resources Act of 2008 (P.L. 110-229, May 2008) directed the NPS to evaluate: (1) the suitability and feasibility of designating all or a portion of the area known as the Rim of the Valley Corridor as a unit of Santa Monica Mountains National Recreation Area (SMMNRA); and (2) the methods and means for the protection and interpretation of this corridor by the National Park Service, other federal, state, or local government entities or private or non-governmental organizations. The Rim of the Valley Corridor is described in legislation as the area generally including the mountains encircling the San Fernando, La Crescenta, Santa Clarita, Simi, and Conejo Valleys in southern California.

Study Area

The study area covers approximately 650,000 acres in the southern California region. It includes SMMNRA (approximately 153,000 acres) and approximately 180,000 acres of lands managed by the U.S. Forest Service (the Angeles National Forest and the recently established San Gabriel Mountains National Monument). Numerous agencies and conservation organizations manage lands within the study area. Over 5 million people live in the study area, another 13 million live in surrounding communities within the greater Los Angeles metropolitan area. Land use is diverse and includes large natural areas, suburban communities, farms and ranches, highly urbanized areas, freeways, and an array of public infrastructure. However, the vast majority of lands (84%) are undeveloped.

Study Findings

The Rim of the Valley Corridor study area contains nationally significant resources. The topographically and geographically complex study area encompasses a mosaic of natural communities that span coastal and montane ecosystems and support high levels of biodiversity. More than 10,000 years of human habitation are represented in the cultural resources found within the study area. The area also contains significant resources, not currently represented in the national park system, which offer new opportunities for scientific research, interpretation, and education and are therefore suitable for inclusion in the national park system.

The creation of a new national park unit is not feasible, when compared to the resource management and operational efficiencies afforded by including additional areas in SMMNRA. Many of the significant resources within the study area augment the national significance of SMMNRA and provide habitat connectivity essential for long-term preservation of the significant resources within the Santa Monica Mountains, thus warranting physical connection to SMMNRA and/or a seamless, collaborative management approach.

An adjustment to the boundary of SMMNRA is feasible using the collaborative partnership-based management model exemplified by SMMNRA, which respects the complex mix of existing land use, ownership, and regulatory authorities. Inclusion of lands of the Rim of the Valley Corridor in SMMNRA would contribute to protection of significant resources related to the purpose of the national recreation area and expand opportunities for public enjoyment at SMMNRA.

Alternatives Evaluated

The study evaluates a range of opportunities to cooperatively manage the significant resources of the study area:

- *Alternative A: Continuation of Current Management (No Action)*, serves as a baseline for evaluating the action alternatives;
- *Alternative B: Cooperative Conservation Partnership* would foster cooperative planning and funding tools for the NPS, partner agencies and landowners in the Rim of the Valley Corridor and key habitat linkages to the Los Padres and Angeles national forests (no new areas would be added to SMMNRA);
- *Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)*, a SMMNRA boundary adjustment (approximately 173,000-acre addition) that would provide more parks and protect habitat linkages, with an emphasis on creating more recreational opportunities near urban areas; and
- *Alternative D: Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas*, a SMMNRA boundary adjustment (approximately 313,000 acre addition) with an emphasis on protecting regional wildlife corridors, would add most areas within Rim of the Valley Corridor (excluding U.S. Forest Service managed areas) to SMMNRA. Cooperative conservation approaches would also be recommended for key habitat linkages between the Rim of the Valley Corridor study area and the Los Padres and Angeles national forests.

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Executive Summary

Background and Study Process

The Consolidated Natural Resources Act of 2008 (P.L. 110-229, May 2008) authorized the National Park Service (NPS):

> *"to conduct a special resource study of the area known as the Rim of the Valley Corridor, generally including the mountains encircling the San Fernando, La Crescenta, Santa Clarita, Simi, and Conejo Valleys in southern California to determine:*
>
> *(1) the suitability and feasibility of designating all or a portion of the corridor as a unit of Santa Monica Mountains National Recreation Area (SMMNRA); and*
>
> *(2) the methods and means for the protection and interpretation of this corridor by the NPS, other federal, state, or local government entities or private or non-profit organizations."*

To achieve objective (1), this study analyzes whether any portion of the Rim of the Valley Corridor study area is eligible to be designated as a unit of the national park system or added to the existing park unit of Santa Monica Mountains National Recreation Area (SMMNRA). To achieve objective (2), the study analyzes the methods and means for protecting and interpreting the natural and cultural resources of the study area by the National Park Service, other federal, state, and local government entities or private and non-profit organizations.

The purpose of a special resource study is to provide information to aid Congress, the U.S. Department of the Interior and the NPS in determining whether there are feasible and appropriate roles for the NPS within the study area.

Relationship to the San Gabriel Watershed and Mountains Special Resource Study

The NPS completed the *San Gabriel Watershed and Mountains Special Resource Study* in April 2013. The study area covered approximately 700,000 acres of land in the greater Los Angeles metropolitan area. A portion of the area evaluated in the *San Gabriel Watershed and Mountains Special Resource Study*, the western San Gabriel Mountains and portions of the Upper Santa Clara River, is also included in the Rim of the Valley Corridor study area.

The study recommended: 1) designation of a San Gabriel Unit of SMMNRA (50,000 acres) that would include areas of the San Gabriel and Rio Hondo river corridors and the Puente-Chino Hills; 2) additional federal recognition, tools, and support for the Angeles National Forest; 3) collaboration between the USFS and the NPS to protect the significant resources of the San Gabriel mountains and watershed; and 4) NPS technical assistance to interested communities, agencies, and organizations to protect the region's wildlife corridors and provide close-to-home recreational opportunities (See *Appendix H* for final recommendations).

In the interest of efficiency and consistency, this study has adopted the analysis and final recommendations of the *San Gabriel Watershed and Mountains Special Resource Study* for these areas. Those findings are restated throughout the document where appropriate.

Legislative and Policy Direction

New National Park Unit

In evaluating whether the study area is eligible for designation as a new unit of the national park system, the study follows the process established by the National Park System New Area Studies Act (P.L. 105-391, 16 U.S.C. Sec. 1a-5) and addresses the criteria for new areas outlined in NPS *Management Policies 2006*.

According to NPS management policies, a proposed addition to the national park system will receive a favorable recommendation from the NPS only if it meets all of the following four criteria for inclusion:

- it possesses nationally significant natural or cultural resources;
- it is a suitable addition to the system;
- it is a feasible addition to the system; and
- it requires direct NPS management, instead of alternative protection by other public agencies or the private sector.

These criteria are designed to ensure that the national park system includes only the most outstanding examples of the nation's natural and cultural resources, while recognizing that there are other management alternatives for preserving the nation's outstanding resources. Alternatives for NPS management are developed for areas that meet all four of the criteria for inclusion.

Addition to Santa Monica Mountains National Recreation Area (Boundary Adjustment)

The determination of whether any part of the study area qualifies as an addition (or boundary adjustment) to Santa Monica Mountains National Recreation Area (SMMNRA) to carry out the purpose of the national recreation area is based on criteria for boundary adjustments as described in NPS *Management*

Policies 2006 (Section 3.5). Areas acceptable for addition to an existing park boundary (in this case SMMNRA) must:

- protect significant resources and values, or enhance opportunities for public enjoyment related to park purposes
- address operational and management issues, such as the need for access or the need for boundaries to correspond to logical delineations such as topographic or other natural features or roads; or
- otherwise protect park resources that are critical to fulfilling park purposes

All recommendations for boundary changes must also meet the following two criteria:

- the added lands will be feasible to administer considering their size, configuration, and ownership; costs; the views of and impacts on local communities and surrounding jurisdictions; and other factors such as the presence of hazardous substances or exotic species.
- other alternatives for management and resource protection are not adequate.

A new unit of the national park system or park boundary expansion requires Congressional action.

Fire Management Documentation

The study legislation also requires the Secretary of the Interior to document the process used to develop the SMMNRA Fire Management Plan and all activity conducted pursuant to the plan designed to protect lives and property from wildfire. This documentation can be found in Appendix G of the draft study report.

Environmental Compliance

The National Park System New Area Studies Act requires that special resource studies be prepared in compliance with the National Environmental Policy Act (NEPA). The NPS determined that an environmental assessment (EA) is a sufficient level of environmental analysis for this study. This study complies with the National Historic Preservation Act, Section 106 and 110 requirements. Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties. The Section 106 process is being coordinated with the National Environmental Policy Act process for this special resource study. No significant impacts or effects are anticipated from the findings and recommendations of this study.

Study Area

The study area covers more than 1,000 square miles (650,000 acres) in two counties in the greater Los Angeles metropolitan region of California. It is surrounded by some of the most densely populated and diverse areas of the United States.

Spanning both Los Angeles and Ventura counties, the study area includes portions of the Santa Monica Mountains, Conejo Mountain-Las Posas Hills, Simi Hills, Santa Susana Mountains, Upper Santa Clara River, the Verdugo Mountains-San Rafael Hills, the Los Angeles River and Arroyo Seco corridors, and the San Gabriel Mountains. As a whole, the study area is approximately 50% privately owned lands and 50% public lands. Portions of at least 30 communities are located in the study area, with approximately 5.1 million residents.

The majority of the lands in the study area (approximately 84%) are undeveloped open space or areas protected for conservation and recreation purposes. Federally protected areas within the study area include SMMNRA, a unit of the national park system, the Angeles National Forest, and the San Gabriel Mountains National Monument. These federally-protected areas comprise a little over one-half of the study area lands. The study area also contains highly developed urban areas which are primarily located along the Los Angeles River and Arroyo Seco corridors and along some hillsides that are adjacent to the urbanized valleys/population centers.

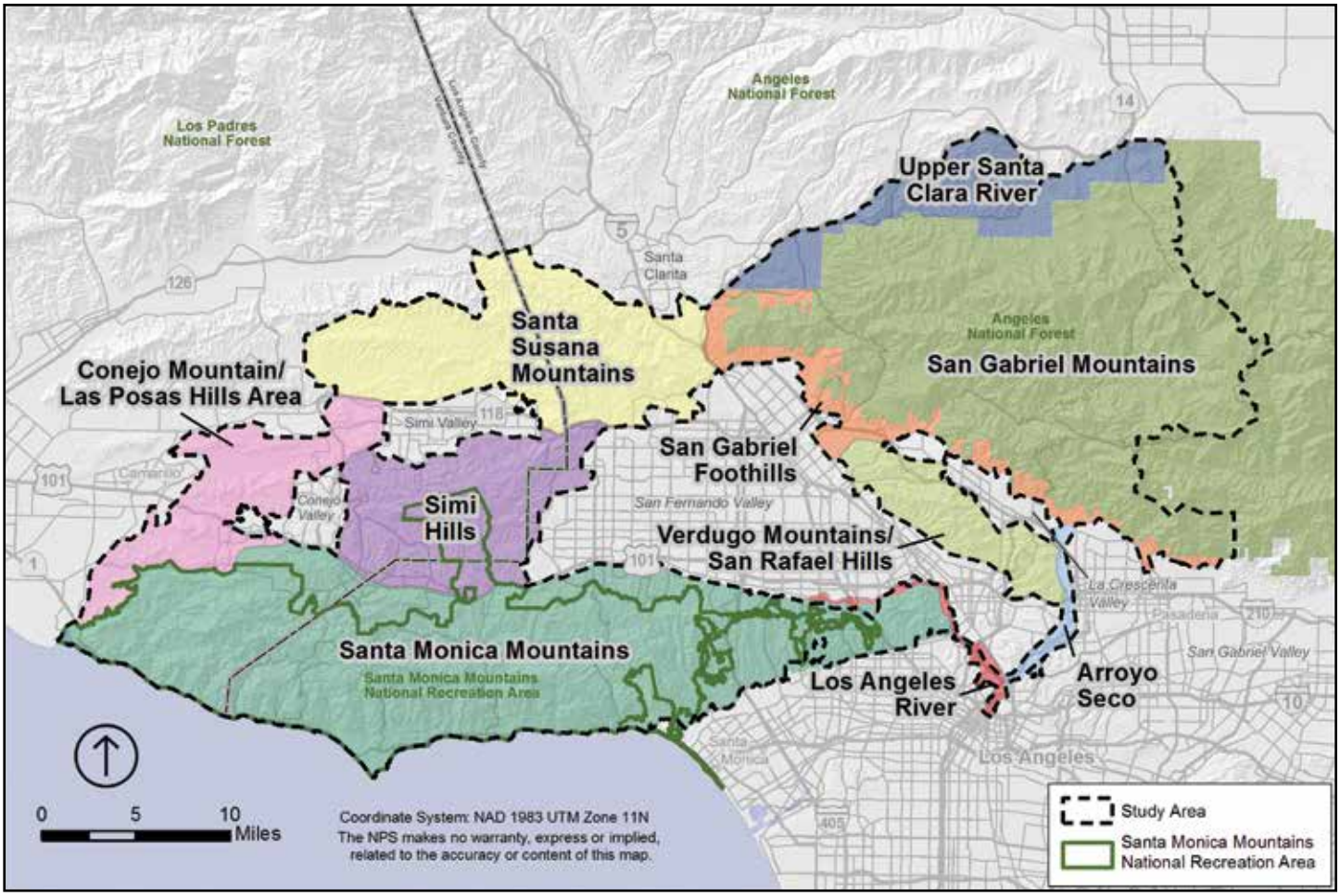
Of the 650,000 acre-study area, approximately one-quarter (approximately 153,000 acres) is within the existing boundary of SMMNRA. SMMNRA protects the largest expanse of mainland Mediterranean ecosystem in the national park system. No other national park features such a diverse assemblage of natural, cultural, scenic, and recreational resources within easy reach of a population of more than 18 million. For over 30 years, the NPS has managed SMMNRA through a unique partnership in which the federal government works collaboratively with state, and local park agencies and private landowners to protect the natural and cultural resources of the area. Within SMMNRA, the NPS directly owns and manages over 23,000 acres, or 15% of the 153,000 acres within the national recreation area boundary.

The U.S. Forest Service (USFS) manages approximately one-quarter of the study area (approximately 180,000 acres in the San Gabriel Mountains) as part of the Angeles National Forest and the San Gabriel Mountains National Monument. Together, the mountains within SMMNRA and the U.S. Forest Service lands serve as large natural areas that provide the majority of the study area's core habitat for native plant and wildlife species. The network of mountains, rivers and streams that connect these two large areas, including the Simi Hills, the Santa Susana Mountains, Verdugo Mountains-San Rafael Hills, the Los Angeles and Santa Clara Rivers and their tributaries, provide additional habitat and corridors that connect the region's core habitat areas.

Public Involvement

Public Scoping

The NPS launched public scoping for this study in summer 2010. A notice of scoping was published in the Federal Reg-



ister (Vol. 75, No. Number 167 (Monday, August 30, 2010), pp. 52969-52971). The study team produced and distributed an informational newsletter and press releases to the media, individuals, organizations, and government officials. Public information was made available on the National Park Service's Planning, Environment and Public Comment (PEPC) website and project website at www.nps.gov/pwro/rimofthevalley.

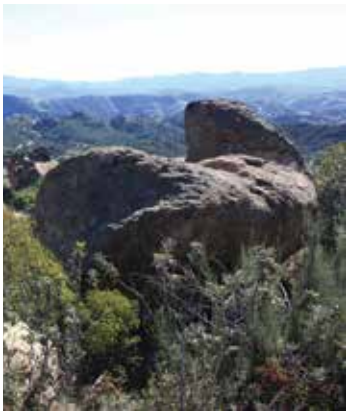
In September and October 2010, the NPS hosted nine public meetings within the study area (Chatsworth, Los Angeles, Santa Clarita, Thousand Oaks, Calabasas, Tujunga, Altadena, and Sylmar). In all, more than 400 people participated in the public workshops. The NPS received more than 2,000 comment letters and emails from federal and state agencies, cities, organizations, and community members regarding the scope of the study. The NPS shared a summary of the public comments in *Newsletter #2* during summer 2011.

Preliminary Findings and Alternative Concepts

NPS published preliminary findings and alternative concepts in *Newsletter #3*, which was distributed in October 2012, and accepted public comments on these ideas through January 2013. Although some of the natural and cultural resources in the study area met the significance and suitability criteria for new park areas, the NPS preliminarily determined that a boundary expansion of SMMNRA would be less costly and more efficient than establishment of a new stand-alone park area. During this period the NPS hosted seven public meetings (Thousand Oaks, Santa Clarita, Glendale, Chatsworth, Encino, Moorpark and Pasadena) and two on-line forums in November and December 2012. A total of 125 people participated in meetings and more than 5,000 written comments were received.

Draft Report Publication, Review and Transmittal of Final Study Findings

Publication of the *Rim of the Valley Corridor Draft Special Resource Study and Environmental Assessment* will be followed by a minimum 60-day public comment period. If no significant environmental impacts are identified and no major changes are made to the alternatives then a *Finding of No Significant Impact* (FONSI) would conclude the study process. The FONSI will include a final decision by the NPS (selected alternative). The Secretary of the Interior will then transmit the final study report consisting of the FONSI, and any technical corrections to the draft study report, to Congress, along with the Secretary's recommendations for the study area. At this time, the final recommendations will be made available to the public.






The study finds that the Rim of the Valley Corridor contains nationally significant natural resources. Examples from left to right include geologic history of the Transverse Ranges Province, as shown in the Simi Hills; diverse fossils, as shown by these 12 million year old fish fossils; and high biodiversity, as shown by the native grassland vegetation and at Laskey Mesa and the previously believed extinct San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*). Photos: NPS.

Study Findings

The study process includes two analyses, one that focuses on the potential creation of a new unit of the national park system; and a second that focuses on potential adjustment of the existing boundary of SMMNRA. It should be noted that there is a certain amount of overlap between the criteria for a new park unit and the criteria for a boundary adjustment to an existing national park area. Both sets of criteria require proposals to be feasible and demonstrate a need for NPS management over management by other entities.

New National Park Unit

National Significance

The National Park Service (NPS) uses four basic criteria to evaluate the significance of proposed areas. These criteria, listed in the NPS *Management Policies 2006*, state that a resource is nationally significant if it meets all of the following conditions:

- It is an outstanding example of a particular type of resource.
- It possesses exceptional value or quality in illustrating or interpreting the natural or cultural themes of our nation's heritage.
- It offers superlative opportunities for public enjoyment, or for scientific study.
- It retains a high degree of integrity as a true, accurate, and relatively unspoiled example of a resource.

The NPS evaluates national significance for cultural resources by applying the national historic landmarks (NHL) criteria contained in 36 CFR Part 65.

The study finds that the Rim of the Valley Corridor contains resources of national significance, many of which have been identified as nationally significant through previous studies or designations. This includes national park or trail system designations (Santa Monica Mountains National Recreation Area, Juan Bautista de Anza National Historic Trail and Old Spanish National Historic Trail), and national historic landmarks.

Nationally significant natural resources include: 1) outstanding examples of geologic history including the evolution of the Transverse Ranges Province; 2) a diversity of well-preserved marine and terrestrial paleontological resources; and 3) high biodiversity, including outstanding examples of native grasslands, coastal sage scrub, chaparral, dry coniferous forests, and alluvial fan sage scrub.

Nationally significant cultural resources represent a wide range of themes related to human use and settlement in the region. High concentrations of archeological resources provide insight into more than 10,000 years of Native American history. Outstanding examples of cultural resources also include national historic landmarks representing topics such as architecture, recreation, space exploration, and oil extraction, as well as national historic trails that mark important national events related to migration and commerce. Additionally, the study area features cultural resources identified as significant through national historic landmark theme studies in areas such as astronomy and astrophysics.

The nationally significant resources of the study area offer superlative opportunities for public enjoyment and scientific study. The varied topographic features provide highly scenic landscapes including seashore, mountain views, and verdant canyons within a two hour drive of more than 18 million people. Existing public open spaces, recreation areas, and trails provide superlative opportunities for hiking, biking, outdoor education, and birding. Cultural resources depict a wide range of historical themes and provide opportunities to interpret the region's rich cultural heritage.

The dynamics between areas of exceptionally high biodiversity and long history of human settlement and development provide unique opportunities for scientific research and study. The Santa Monica Mountains and the San Gabriel Mountains have a long history of research in geology, Mediterranean



Nationally significant cultural resources relate to a variety of themes including archeological resources, as shown by rock art; oil extraction, represented by Well No. 4 Pico Canyon; architecture, including the Gamble House; and space exploration resources, such as the Space Flight Operations Center at the Jet Propulsion Laboratory. Photos (left to right): NPS, Herald-Examiner Collection/Los Angeles Public Library, NPS, NASA.

ecosystems, and astronomy. Comparatively fewer studies have been published on the natural and cultural resources of the Simi Hills, Santa Susana Mountains, and Verdugo Mountains, which have high potential for scientific study.

The study area retains a high degree of integrity and contains relatively unspoiled examples of significant resources, despite impacts in some areas from agriculture, urban development, and associated infrastructure. Approximately 84% of the study area lands are protected recreation areas, conserved open spaces, or vacant undeveloped lands. Isolated pockets of both nationally significant natural and cultural resources are present in the more urbanized portions of the study area.

Suitability

To be considered suitable for addition to the national park system, an area must represent a natural or cultural resource type that is not already adequately represented in the national park system, or is not comparably represented and protected for public enjoyment by other federal agencies; tribal, state, or local governments; or the private sector.

The NPS has determined, based on the character, quantity and quality of resource values in the study area, that there are nationally significant resources in the Rim of the Valley Corridor study area suitable for inclusion in the national park system. These resources are primarily located in the San Gabriel Mountains and foothills, Upper Santa Clara River, Santa Susana Mountains, and Arroyo Seco area. Each of these areas contain natural and/or cultural resources that represent themes not currently represented in the National Park Service or comparably managed sites, including:

- The **San Gabriel Mountains and Upper Santa Clara River** depict unique geological features and dramatic geologic processes, a wide diversity of rare habitats located in close proximity given the dramatic changes in topography, and technological advances in the areas of astronomy, chaparral ecosystems, and watersheds.
- The **Santa Susana Mountains** contain a convergence of montane and desert influences that create rare and unusual plant communities not found in other comparably managed areas. Well No. 4, Pico Canyon Oil Field National Historic Landmark, represents the birth of California's oil industry which was once the second most prolific oil-producing state.
- Suitable national historic landmarks in the culturally rich **Arroyo Seco** include the Rose Bowl National Historic Landmark, representing a unique aspect of recreation in America, and the Space Flight Operations Center and Twenty-five Foot Space Simulator national historic landmarks which embody significant advances in deep space exploration.

The Santa Monica Mountains and Simi Hills (outside SMMNRA), Conejo Mountain-Las Posas Hills, Los Angeles River and Verdugo Mountain-San Rafael Hills areas contain resources of national significance but are similar to those already protected in SMMNRA. These resources do not meet suitability requirements for a new unit of the national park system, but would expand and enhance resource protection and visitor use opportunities currently represented in SMMNRA.

Feasibility

To be feasible as a new unit of the national park system, an area must be: (1) of sufficient size and appropriate configuration to ensure sustainable resource protection and visitor enjoyment (taking into account current and potential impacts from sources beyond proposed park boundaries), and (2) capable of efficient administration by the National Park Service at a reasonable cost.

In evaluating feasibility, the NPS considers a variety of factors for a study area, such as the following:

- Land use, current and potential site uses, ownership patterns, planning and zoning
- Access and public enjoyment potential

- Boundary size and configuration
- Existing resource degradation and threats to resources
- Public interest and support
- Social and economic impact
- Costs associated with operation, acquisition, development, and restoration

The feasibility evaluation also considers the ability of the NPS to undertake new management responsibilities in light of current and projected availability of funding and personnel. An overall evaluation of feasibility is made after taking into account all of the above factors.

The feasibility evaluation generally found that most feasibility factors could be met. Although the study area has a diverse array of land uses, ownership, and management, the area could be feasibility managed as national park unit using the collaborative management model exhibited by SMMNRA. There is considerable potential for public access and enjoyment including many existing trails, parks, and open space and opportunities to expand trails systems and provide additional recreational areas. Lands within the study area are of sufficient size and configuration to protect nationally significant resources. Social and economic impacts would largely be beneficial, as a new park unit would bring new jobs and revenue to the region. However, costs of a new national park unit are not feasible when compared to the lesser costs of expanding the existing SMMNRA boundary, which is also under consideration in this study.

The study finds that creation of a new national park unit is not feasible, in comparison to the resource management and operational efficiencies afforded by a boundary adjustment to SMMNRA. Many of the significant resources within the study area augment the national significance of SMMNRA and provide habitat connectivity essential for long-term preservation of the significant resources within the Santa Monica Mountains, thus warranting physical connection to the SMMNRA boundary and a seamless interagency management approach.

Need for NPS Management

The need for direct NPS management is the final criterion for a favorable recommendation for a proposed new unit of the national park system. Only areas that are determined significant, suitable, and feasible as a new national park unit are evaluated for this final criterion. Because a boundary adjustment was found to be a more feasible option for NPS management within the study area, this criterion need not be evaluated.

Conclusions – New National Park Unit

The NPS finds that the study area contains nationally significant resources suitable for inclusion in the national park system. While the study found that that multiple feasibility factors relevant to establishing a new unit of the national park system could be met, the assessment of boundary adjustment criteria identified resource management and operational efficiencies that could not be achieved through the establishment of a new unit. It was recognized that a new unit would not compare favorably with a SMMNRA boundary adjustment in terms of costs, the duplication of management structures, and the complexity involved in operating two similar but independent units. The study team concludes that it would not be feasible to establish a new partnership unit that would have similar purposes to the existing park, and adjacent to or within close proximity to it. A boundary adjustment to SMMNRA would be more feasible. Therefore, the study area does not meet the feasibility criterion and is not eligible for designation as a new unit of the national park system.

Addition to Santa Monica Mountains National Recreation Area (Boundary Adjustment)

In accordance with section 3.5 of NPS *Management Policies 2006*, the NPS evaluated whether boundary adjustments (additions to) SMMNRA would protect significant resources related to the purpose of the national recreation area, address operational issues, or otherwise protect resources critical to fulfilling the authorized purpose of SMMNRA. The evaluation also determines the feasibility of administering the newly added lands in terms of size, configuration and ownership, costs, impacts on local communities and surrounding jurisdictions, and other factors such as the presence of hazardous substances or exotic species. Finally, the evaluation determines whether other alternatives for management are adequate or not.

Protect Significant Resources and Values, or to Enhance Opportunities for Public Enjoyment Related to Park Purposes

The study finds that the addition of lands in the study area to SMMNRA would enhance protection of significant resources and expand opportunities for public enjoyment related to the purpose of SMMNRA. Areas eligible for addition to SMMNRA (approximately 313,000 acres of land) include: habitat types that contribute to the high biodiversity of the Santa Monica Mountains; functioning wildlife corridors; highly scenic landscapes; and archeological sites. Eligible areas also include thousands of acres of open space and recreation areas, miles of trails, hundreds of sites of historical value, and national historic trails which provide exceptional public enjoyment opportunities. Expanding SMMNRA to the east into the City of Los Angeles would provide new opportunities for the NPS to reach out to communities in some of the most ethnically diverse and densely populated areas in the United States.

Otherwise Protect Park Resources that are Critical to Fulfilling Park Purposes

Including study area resources in SMMNRA allows for greater protection of national recreation area resources and fulfillment of park purpose. Maintaining SMMNRA's habitat value and high biodiversity will depend in part on functional habitat connectivity and protection of the broader ecosystem. A boundary

adjustment that would include the Rim of the Valley Corridor areas would provide the widest range of tools to maintain habitat connectivity and protect significant resources including authority to expend funds to inventory, monitor, and study resources, as well as protection through land acquisition.

Feasibility to Administer Lands Added through the Boundary Adjustment

Added lands must be feasible to administer considering their size, configuration, and ownership; costs; the views of and impacts on local communities and surrounding jurisdictions; and other factors. Lands eligible for inclusion in SMMNRA include approximately 313,000 acres of land in the study area and along the Los Angeles River that are not already within the boundaries of SMMNRA. Eligible areas include the Santa Monica Mountains outside of the current boundary, the Arroyo Seco and Los Angeles River corridors, the Verdugo Mountains-San Rafael Hills, the San Gabriel Foothills, the Upper Santa Clara River corridor, portions of the Santa Susana Mountains and Simi Hills, and the Conejo Mountain-Las Posas Hills. Areas determined ineligible for inclusion in a boundary adjustment include lands within the San Gabriel Mountains that are currently managed by the U.S. Forest Service.

Within these 313,000 acres, two boundary adjustment configurations are considered feasible additions to SMMNRA. *Chapter 5: Alternatives*, explores these two different approaches to a SMMNRA boundary adjustment. The first configuration (defined as alternative C) would expand the national recreation area to include 173,000 acres to the north and the east, focusing resources in more urban areas, where there is a greater need for recreational opportunities and access to open space. The second configuration (defined as alternative D) would include all 313,000 acres determined eligible for inclusion in SMMNRA and therefore would provide greater inclusion of nationally significant resources and important regional wildlife corridors that support the area's high biodiversity.

The cost of an addition to the boundary of SMMNRA is feasible using the existing collaborative partnership-based management model exemplified by SMMNRA, which respects and builds upon the complex mix of existing land use, ownership, and regulatory authorities. A boundary adjustment would enhance opportunities for collaborative management with local, state, and federal managers to protect natural and cultural resources and provide recreation, public access, and other compatible uses. Given the high cost of land in Los Angeles and Ventura counties, limited, strategic land acquisition would likely be most feasible. Land acquisition would only be considered where there are willing sellers.

The social and economic impacts of a boundary adjustment appear to be largely beneficial. The addition of new areas to SMMNRA would not necessarily establish new regulatory or land use authority over local governments or private lands within the boundary.

Adequacy of Protection Alternatives Considered

This report determines that a boundary adjustment would provide the greatest opportunity for protection of resources related to SMMNRA's purpose when compared to other protection alternatives evaluated in the draft study report. Although other agencies and organizations would provide some level of protection under current conditions (alternative A) and additional NPS tools and resources for regional cooperation (alternative B) would contribute to the long-term protection of SMMNRA, a boundary adjustment would provide NPS with the fullest range of conservation tools and authorities to protect significant resources and provide public enjoyment opportunities. These tools and authorities include direct land conservation by the NPS to protect the broader ecosystem and funding to provide facilities that support recreation and public enjoyment.

Broadening the NPS' ability to partner beyond the current SMMNRA authorized boundary would expand the efficient cooperative management approaches that have been applied in the Santa Monica Mountains for over 30 years. The NPS would be able to expand its current cooperative management agreement with California State Parks, the Santa Monica Mountains Conservancy, and the Mountains and Recreation Conservation Authority, thus allowing for new visitor opportunities, scientific research and study, and coordinated management of essential wildlife corridors. Given the complexity of ownership and management, high cost of land acquisition, and demands of a growing metropolitan region, having multiple agencies working in partnership has been necessary to leverage adequate resources for land protection.

Conclusions – Boundary Adjustment Evaluation

An adjustment to the boundary of SMMNRA is feasible using the collaborative partnership-based management model exemplified by SMMNRA, which respects the complex mix of existing land use, ownership, and regulatory authorities. Inclusion of lands of the Rim of the Valley Corridor in SMMNRA would contribute to protection of significant resources related to the purpose of the national recreation area and expand opportunities for public enjoyment at SMMNRA.

Alternatives

The following section describes a range of management alternatives that are being considered by the National Park Service in the draft study report.

Overview of the Alternatives

The study team developed four alternatives based on information gathered from public and stakeholder input, internal NPS discussions, evaluation of special resource study and boundary adjustment criteria, historical research, and NPS management models. The four alternatives considered are a "no action" alternative, which serves as a baseline for comparison, and three "action" alternatives.

- **Alternative A: Continuation of Current Management (No Action)** serves as a baseline for evaluating the action alternatives;
- **Alternative B: Cooperative Conservation Partnership** would foster cooperative planning and funding tools for the NPS, partner agencies and landowners in the study area and conserve key habitat linkages to the Los Padres and Angeles national forests;
- **Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)** includes a SMMNRA boundary adjustment (approximately 173,000-acre addition) that would provide more recreational opportunities and protect habitat linkages, with an emphasis on creating more opportunities near urban areas; and
- **Alternative D: Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas** includes a SMMNRA boundary adjustment (approximately 313,000-acre addition) with an emphasis on protecting regional wildlife corridors that would include most areas within the Rim of the Valley Corridor (excluding U.S. Forest Service managed areas). Cooperative conservation approaches are recommended for key habitat linkages between the Rim of the Valley Corridor study area and the Los Padres and Angeles national forests.

The alternatives explore ways to meet study objectives and opportunities to address primary issues identified by public and stakeholder scoping comments, provide long-term protection of nationally significant resources, and meet important objectives for the next century of NPS management, as identified through the NPS *Call to Action* initiative (NPS 2012a). These issues include:

- **Protection of Nationally Significant Resources.** The study identifies nationally significant natural and cultural resources in need of protection in the study area.
- **Habitat Fragmentation and Loss of Open Space.** Perhaps the greatest threat to the protection of the nationally significant natural resources in SMMNRA is the loss of habitat connections to other large protected areas.
- **Preservation of Recreational Opportunities and Access to Open Space.** Regional population growth continues, increasing demand for recreational opportunities. Existing park, open space, and recreation areas are unevenly distributed, with the fewest park areas most frequently occurring in low income communities of color and in areas with high numbers of children.
- **Regional Coordination.** The study area includes a diverse array of land managers and resource management agencies. The alternatives explore opportunities for greater efficiency, collaboration, priority setting, and funding to enhance resource protection and public enjoyment opportunities.

Elements Common to All Action Alternatives

A Partnership Approach to Management

The National Park Service recognizes that many other public agencies, private conservation organizations, and individuals successfully manage important natural and cultural resources and recreational opportunities within the study area. The NPS applauds these accomplishments and actively encourages expansion of conservation activities by state, local, and private entities, and by other federal agencies.

For over 30 years, the NPS has managed SMMNRA through a unique partnership in which the federal government works collaboratively with state, and local park agencies and private landowners to protect the natural and cultural resources of the area. In alternatives C and D where new areas are proposed for addition to SMMNRA, this cooperative management approach would continue to apply. It would also continue to be used in ongoing management of SMMNRA (all alternatives).

U.S. Forest Service Management

The alternatives do not include any U.S. Forest Service (USFS) managed lands in a boundary adjustment for SMMNRA. Management and ownership of the Angeles National Forest and San Gabriel Mountains National Monument lands would be maintained in all alternatives. USFS policies would continue to be applied to management of these lands. The NPS and USFS could work cooperatively through cooperative management agreements on initiatives to protect resources, provide visitor services, and conduct public outreach.

Retention of Local Land Use and Existing Regulatory Authorities/ NPS Regulatory Authorities

In all alternatives, lands would continue to be managed through a variety of public and private mechanisms by private landowners, federal, state and local agencies, universities, and organizations. In Santa Monica Mountains National Recreation Area (SMMNRA) where the NPS has proprietary jurisdiction, lands not owned by NPS are typically regulated by local and state agencies or other federal authorities that have jurisdiction in the area. In proprietary jurisdiction parks, the state government has not ceded the state's jurisdiction over the park area to the NPS. However, under the National Park Service Organic Act 1916, which established the National Park Service, the Secretary of the Interior has broad authority to establish regulations on certain activities, regardless of ownership, within authorized national park unit boundaries. Such regulations are found in 36 Code of Federal Regulations (CFR) Chapter 1.

As described in the social and economic impacts section of *Chapters 3* and *4*, additional NPS regulations that could pertain to activities on lands considered for addition to SMMNRA in alternatives C and D include regulation of mineral extraction and the exercise of nonfederal oil and gas rights. These regulations are designed to insure that activities undertaken pursuant to these rights are conducted in a manner consistent with

the purposes for which the national park system and each unit thereof were created.

New or existing solid waste disposal sites would be regulated under 36 CFR Chapter 1, Part 6. These regulations prohibit the operation of any solid waste disposal site, except as specifically provided for, and govern the continued use of any existing solid waste disposal site within the boundary of any unit of the national park system. For example, within SMMNRA, the Sanitation Districts of Los Angeles County obtains a permit from NPS to operate the Calabasas landfill in Agoura Hills.

The extent to which such regulations would affect land uses would be dependent on what is specified in the legislation authorizing the boundary expansion, and the nature of the activities. Legislation would be required to implement a boundary addition to SMMNRA. It should be noted that through any resulting legislation, Congress can make determinations about uses and regulations within a specific park unit. For example, some national recreation areas are open to mineral leasing if specified resource protection and administrative objectives can be met. Congress would also specify which areas would be included or excluded. Additional information on regulations related to mineral extraction and an assessment of land use and social and economic impacts related to these regulations is provided in the evaluation of land use impacts in *Chapter 6: Environmental Consequences*.

All of the study alternatives would adhere to existing general plans and local zoning, as well as state and local laws and policies on lands that are not federally owned. The NPS is authorized to provide comments on proposed projects within SMMNRA and the broader Santa Monica Mountains Zone (SMMZ). SMMNRA's 1978 authorizing legislation established the SMMZ which includes watersheds and canyon slopes associated with, but not formally included in SMMNRA, as well as the easternmost portion of the Santa Monica Mountains encompassing Griffith Park. Local and state agencies are responsible for land use regulations within this zone, but the NPS retains, by law, reviewing authority on projects involving federal funds, permits, or licenses that may affect the national recreation area. This authority was provided by Congress when the national recreation was established to reduce downstream impacts on national recreation area resources when possible.

Privately Owned Lands

Within the national recreation area boundary, the NPS only has authority to directly regulate lands under NPS ownership (with the exception of solid waste facilities and oil and gas extraction as described above). Neither inclusion in the national recreation area nor consideration of cooperative conservation approaches would impact local land use authority over lands not owned by the NPS.

NPS policy is to acquire lands and interests in lands only from willing sellers, with condemnation as a means of last resort. Land acquisition by the NPS would be targeted and limited by funding availability. A land protection plan would set priorities for NPS land acquisition. In some cases Congress has expressly limited NPS land acquisition authorities. Legislation would be required for a boundary expansion to SMMNRA. Such legislation could expressly limit NPS land acquisition to lands for which there are willing sellers.

Rim of the Valley Trail

The NPS would support completion of the Rim of the Valley Trail through partnerships and technical assistance. Once established, the Rim of the Valley Trail could be eligible for designation as a National Recreation Trail, through the existing application process, which is voluntary and could be initiated by trail managers.

Fire Protection

Fire protection would remain the responsibility of existing federal, state, and local agencies (Los Angeles and Ventura counties, U.S. Forest Service, NPS, California Department of Forestry and Fire Protection). NPS fire management practices would only apply to land purchased by the NPS.

Water Supply, Flood Protection, and Sanitation Infrastructure Facilities and Functions

The greater Los Angeles metropolitan region has highly complex systems of public infrastructure to transport and store local and regional water supplies, and to manage flood protection. In addition, numerous facilities are necessary to treat wastewater and manage solid waste. The alternatives would not affect existing public right-of-ways, change existing water rights, water supply operations, water treatment operations, or flood protection efforts.

As described in the section on local land use and regulatory authorities, NPS would be required to regulate solid waste facilities per 36 CFR, Chapter 1, Part 6, in areas proposed for addition to SMMNRA. However, through any resulting legislation, Congress could make an exception for this regulation should this prove an undue burden on the NPS and sanitation agencies given the number of solid waste facilities needed to support adjacent urban areas. Such facilities could also be excluded from a boundary adjustment.

The proposed alternatives would not affect existing and future water rights. Management of water supply and treatment plants would continue under current authorities. In alternatives C and D, the areas proposed for inclusion in the SMMNRA boundary would not entail any new or future beneficial uses or requirements for water supply, water quality, or air quality regulations.

Geographic Database

SMMNRA would work with partners to develop a collaborative geographic database to support decision-making in the study area. Universities and other partners would be engaged to assist in building scientific knowledge to support decision-making.

Alternative A: Continuation of Current Management (No Action Alternative)

Concept

The no action alternative is required by the National Environmental Policy Act to provide a baseline from which to compare action alternatives. Current programs and policies of existing federal, state, local and non-profit organizations would continue at existing levels and current conditions and trends would continue. The geographic focus of alterative A includes the 650,000-acre study area known as the Rim of the Valley Corridor.

The National Park Service would have no role in the study area beyond efforts related to existing national park or historic trail units (Santa Monica Mountains National Recreation Area, the Juan Bautista de Anza National Historic Trail, the Old Spanish National Historic Trail) and existing financial and technical assistance programs such as the Land and Water Conservation Fund grant program, Federal Lands to Parks Program, the Rivers, Trails and Conservation Assistance Program, and the National Historic Landmark program.

Proposed Area

The area examined in the no action alterative is the 650,000-acre study area known as the Rim of the Valley Corridor. This is also the authorized area or jurisdiction for the Santa Monica Mountains Conservancy, a state land conservancy (*Figure 5-1: Alternative A: No Action Alternative*).

Existing Management

Federal, state, and local government agencies and conservation organizations own and manage a little over half of the land in the study area. A full description of these agencies is described in the feasibility section in *Chapter 3: New National Park Unit Criteria Analysis*.

NPS Management

In the no action alternative, the NPS would continue to manage Santa Monica Mountains National Recreation Area (SMMNRA) in partnership with existing agencies and organizations in accordance with the 2002 *General Management Plan*. Land identified for conservation in the national recreation area's land protection plan would be acquired as funds are available. Any SMMNRA management activities in areas beyond the current national recreation area boundary would be limited to projects that further SMMNRA's defined purpose. Current efforts include urban outreach efforts in Los Angeles and resource management cooperation and assistance. In addition to management of SMMNRA, the NPS would continue to manage the two national historic trails (NHT) which traverse the study area, the Juan Bautista de Anza NHT and the Old Spanish NHT. The NPS would continue to provide technical assistance to local communities and organizations through the Rivers, Trails and Conservation Assistance Program and various grant programs that support land conservation and various aspects of historic preservation.

Management by Other Agencies and Organizations

Other federal land management agencies such as the U.S. Forest Service, U.S. Army Corps of Engineers, and the Bureau of Land Management would continue to manage study area lands according to existing plans and policies; as would state and local land management agencies as described in the feasibility section of *Chapter 3*.

In the no action alternative, existing cooperative management efforts between agencies would continue, and current efforts to protect significant resources and provide new recreational opportunities would continue to occur based on current programs and plans as funding allows. Although fluctuations are inevitable, it is assumed that these efforts will continue at current levels.

Private Land Stewardship

Under the no action alternative, private land conservation efforts and private recreational opportunities would continue at current levels. Local ordinances and initiatives would continue to determine appropriate uses for private lands. Private land protection efforts such as conservation easements, however, would continue to be uncoordinated with broader regional goals for conservation and recreational opportunities.

Rim of the Valley Trail

Legislation in 1983 extended the geographic limits of the Santa Monica Mountains Conservancy's authority to encompass an area known as the Rim of the Valley Trail Corridor. Under the no action alternative, various agencies and organizations would likely continue to develop proposed segments of the Rim of the Valley Trail system. The NPS would continue to plan and implement portions of the trail that traverse park boundaries as funds become available. NPS technical assistance in completion of the full trail would be limited to existing technical assistance and grant programs. Other agencies and organizations along the trail corridor would continue to work on existing conservation goals and efforts.

Recreational Opportunities and Access

Under the no action alternative, new recreational opportunities and access would occur through existing agencies, organizations, and local governments as funding permits. The U.S. Forest Service, and other state and local agencies and organizations would continue to manage recreational opportunities

according to current plans. Recreational opportunities would continue to be limited in some portions of the study area, including Los Angeles in the east and in certain neighborhoods of the Camarillo community in the west. However, existing collaborative efforts among the City of Los Angeles, Mountains Recreation and Conservation Authority, the U.S. Army Corps of Engineers, and many other agencies and organizations would continue to expand recreational activities along the Los Angeles River, including expansion of the Los Angeles River Trail.

Resource Protection

Protection of natural and cultural resources under the management of existing agencies would continue. Government grant programs, California state land conservancies, local governments, and non-profit land conservancies/trusts throughout the study area would continue to conserve and restore native ecosystems and habitat. Coordination among agencies to protect wildlife habitat and corridors and cultural resources would continue to occur on a case-by-case basis in various locations throughout the study area.

Operations and Maintenance

Operations and maintenance of existing parks and open space would be assumed to remain at existing levels, with fluctuations over time due to local and state budget priorities. For some agencies, more resources are available for the acquisition of lands than are available for operations and management.

Funding and Costs

Alternative A assumes that current authorized funding levels for the NPS within SMMNRA would continue. Some fluctuations would occur to account for inflation, new management needs, and to reflect national budget priorities. The NPS base budget for SMMNRA in fiscal year 2012 was $8.6 million, which includes employee salaries and day-to-day operating expenses. SMMNRA also receives funding from other NPS programs such as those that fund construction projects and biological monitoring.







Many partnership efforts between public agencies and non-governmental organizations occur in the region. Examples include land protection, such as the purchase of Elsmere Canyon in the study area through partnership between local and state agencies (top); recreation planning, such as establishment of the Los Angeles River Recreation Zone (center); and study of wildlife movement in the region which has included SMMNRA (bottom). Photos: NPS.

Alternative B: Cooperative Conservation Partnership

Concept

Congress would authorize and direct SMMNRA to facilitate a partnership of public and private landowners, organizations, and institutions to establish an interconnected system of parks, habitat, and open space within the study area. Rim of the Valley Corridor area partners would also collaborate to provide coordinated education and interpretation focused on connecting people to the special resources and stories in the study area. The geographic focus of alterative B includes the 650,000-acre study area known as the Rim of the Valley Corridor and habitat linkage areas that connect the Rim of the Valley Corridor to the Los Padres National Forest and the Sierra Pelona unit of the Angeles National Forest. Existing agencies, organizations, and landowners would continue to own and manage lands within these areas. The existing SMMNRA boundary would remain unchanged.

These objectives would be achieved through the development of a cooperative conservation plan. The plan would identify shared goals and identify specific strategies for connecting open space, providing new recreational opportunities, and coordinated education and interpretation. Implementation of the plan would be accomplished by the public and private organizations and individuals that own and manage land in the area.

The NPS would continue to manage SMMNRA in partnership with other agencies and organizations. Beyond SMMNRA, the NPS would work through existing authorities to provide technical assistance to partners to achieve the goals of the plan.

Proposed Area

There would be no boundary adjustment to SMMNRA. The geographic focus of the partnership efforts and NPS technical assistance would generally include the Rim of the Valley Corridor study area and habitat linkage areas important for protection of significant resources, including areas connecting the Santa Susana Mountains to the Topatopa Mountains and areas connecting the San Gabriel Mountains to the Sierra Pelona (*Figure 5-2: Alternative B: Cooperative Conservation Partnership*).

Management Approach

Achieving Goals through Cooperative Conservation

Existing management by agencies, local government, organizations, landowners, and institutions as described under the no action alternative would continue under this alternative. However, through the development of a cooperative conservation plan, agencies, organizations, and landowners would work together to establish regional goals and priorities for protection of significant resources, including key wildlife corridors, and new opportunities for recreation, and educational programming throughout the area. Federal, state, local, and private organizations could participate to develop and initiate implementation of the cooperative conservation plan. The cooperative conservation planning effort would not establish additional regulatory or land use authority over existing governmental agencies or other regulatory authorities. Local government participation and implementation actions would be voluntary.

Congress would direct the NPS to facilitate the development of the conservation plan for the Rim of the Valley Corridor area and adjacent habitat linkages. Following completion of the plan, SMMNRA would provide technical assistance to agencies and organizations in the Rim of the Valley Corridor area to achieve the goals of the plan and to increase outreach efforts to local communities. NPS technical assistance could be provided for natural resource protection, trail and park planning, and partnership development between agencies, organizations, and landowners to facilitate achievement of common goals.

Non-Governmental Organizations and Private Land Stewardship

Additional resources, strategies, and opportunities for private conservation efforts and land stewardship would be a key component of the cooperative conservation plan. Local landowners and organizations could participate in the development of the plan. Private land stewardship actions would be voluntary on the part of the landowner. The cooperative conservation plan could identify additional opportunities to provide technical assistance and leverage funding and for private landowners to conserve or restore lands.

Non-governmental organizations would be part of the cooperative conservation planning effort and could work collaboratively with agencies and private landowners to help protect significant resources and critical wildlife corridors.

Rim of the Valley Trail

The cooperative conservation plan would identify opportunities, priorities, and specific strategies for completion of the Rim of the Valley Trail. Planning and implementation of the trail would be supported by the NPS through technical assistance and partnerships. The trail would continue to be owned and managed by partner agencies and organizations. Those agencies and organizations would continue to be responsible for trail development.

Recreational Opportunities and Access
The cooperative conservation plan would identify priorities for recreational opportunities with particular emphasis on connecting existing trail systems and park units and targeting new recreation and open space for communities that currently lack adequate access.

The NPS would provide technical assistance to communities and organizations within the Rim of the Valley Corridor area to plan for parks and trails, and to provide interpretation and education about significant resources and conservation efforts. The NPS would coordinate and collaborate with the U.S. Forest Service's Southern California Consortium to conduct outreach with schools and youth.



In alternative B, the NPS would provide technical assistance and partnership support for planning and implementation of the Rim of the Valley Trail. Photo: NPS.

Education and Interpretation
The cooperative conservation plan would evaluate needs and opportunities for interpretation and education. The NPS could provide technical assistance in interpretive and educational messaging in partnership with existing agencies and organizations throughout the cooperative conservation area. Public engagement in resource protection through both interpretation and citizen science would be explored in the cooperative conservation plan.

Resource Protection
The cooperative conservation plan would identify common priorities for land conservation that would emphasize protecting and enhancing habitat connectivity between existing parks and open spaces, and protection of nationally significant resources. Existing park and open space authorities would use the plan to target future land conservation efforts around priorities established in the cooperative conservation plan. Emphasis would also be placed on private land stewardship and providing technical assistance to public and private landowners, as requested, to conserve resources. The NPS would continue to purchase lands to protect core habitat areas and wildlife corridors within the existing SMMNRA boundary and collaborate regionally to share research and information to protect important wildlife corridors.

In more developed areas, the cooperative conservation plan would identify priority areas where restoration could enhance biodiversity and create more resilient biological systems. Restoration objectives explored in the plan could create new habitat linkages between the Santa Monica and San Gabriel Mountains. In more rural and undeveloped areas, existing federal and state programs that provide financial incentives for private landowners to restore habitat could be leveraged to achieve plan objectives.

Partner agencies and organizations would make recommendations related to cultural resources protection and interpretation and would engage key educational and research institutions to implement the recommendations. Additional inventories, documentation and mapping of cultural sites could be undertaken both on public lands and on the land of willing private landowners. Information about sensitive sites need not be released to the public; details and locations may need to be withheld to protect the resources. Native American tribes and organizations with ties to the area could continue to work with landowners and managers to protect sacred sites and archeological resources, and to obtain access or ownership of important sites for ceremonial, interpretive, and/or educational purposes.

Operations and Maintenance
Existing public and private landowners and managers would continue to operate and manage their land and facilities. The cooperative conservation plan could identify additional needs for operations and maintenance as well as opportunities where cooperative management approaches could streamline the operation and maintenance of parks and open space.

Funding and Costs
The cooperative conservation plan would identify ways to leverage additional resources from existing incentive programs and outside funding sources. To facilitate development of the cooperative conservation plan, the NPS would require funding for coordination of the plan. Given the complexity of jurisdictions and land ownership in the region, and the amount of public engagement that would be anticipated, the total one-time cost of the effort could range from $500,000-$700,000. These costs would include staffing, public outreach, and development of publications and outreach materials.

Although the NPS would not have direct management responsibilities for areas beyond SMMNRA, additional resources would be required for the NPS to engage in cooperative efforts and to provide long-term technical assistance in the implementation of the cooperative conservation plan. The annual NPS operating budget increase for these cooperative conservation efforts (based on FY2012 costs) is estimated to be approximately $400-1,000,000, primarily for staffing. The level of staffing would indicate the degree to which the NPS could provide technical assistance and additional outreach and education programs.

Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)

Concept

Alternative C would include a boundary adjustment to Santa Monica Mountains National Recreation Area (SMMNRA) to provide more recreational opportunities to a broad range of urban audiences, including many who are under-represented in national parks and underserved by state and local parks. This alternative would also provide for protection of significant resources and habitat connections within the proposed addition to SMMNRA.

The proposed boundary adjustment would add 173,000 acres to SMMNRA's authorized boundary. Areas included in the boundary adjustment generally include the portions of the study area bordering the most populous areas of the Los Angeles region, including the mountains surrounding the San Fernando and La Crescenta Valleys, and the Los Angeles River and Arroyo Seco corridors. The boundary adjustment would not include any area of the Angeles National Forest or San Gabriel Mountains National Monument.

SMMNRA would be authorized to partner and provide technical assistance to land managers and private landowners to protect habitat connections to the national forests and to assist local communities in planning for recreational opportunities.

Proposed Area

In alternative C, the proposed boundary adjustment would add the Los Angeles River and Arroyo Seco corridors, the Verdugo Mountains-San Rafael Hills, the San Gabriel Mountains foothills, and the eastern portions of the Simi Hills and the Santa Susana Mountains to SMMNRA. Existing parks such as Griffith Park, Hansen Dam, Sepulveda basin, Los Encinos State Park, Debs Park, El Pueblo de Los Angeles Historical Monument, and Los Angeles State Historic Park would serve as major portals into the Rim of the Valley area. U.S. Forest Service managed lands would not be included in the boundary adjustment (*Figure 5-3: Alternative C: Rim of the Valley Boundary Adjustment*).

The proposed boundary adjustment would add 173,000 acres to SMMNRA and would require Congressional legislation for implementation. Approximately 40% of the 173,000-acre addition is currently protected by other land management agencies and organizations for purposes that include conservation, open space, and/or recreation.

Management Approach

Management by existing agencies, local governments, organizations, private landowners, and institutions described under the no action alternative would continue under alternative C. However, the NPS would become another partner in the management of an additional 173,000 acres within the study area. Cooperative conservation approaches described under alternative B would be a component of the management approach for the proposed addition to SMMNRA.

The NPS could expend funds on resource protection, visitor services, land acquisition, and the planning and development of visitor facilities such as trails, waysides, etc. within the NPS boundary. NPS land acquisition would be targeted, with an emphasis on significant resources, maintaining and enhancing habitat connectivity, and providing recreational opportunities. The NPS would only consider purchase of land from willing sellers.

As in alternative B, the NPS would also expand its capacity to provide technical assistance to agencies and organizations in the Rim of the Valley Corridor area for natural resource protection and restoration, trail and park planning, and to bring agencies, organizations, and landowners together towards achieving common goals.

Local Land Use Authorities

The SMMNRA boundary addition would not establish additional regulatory or land use authority over local governments. Local ordinances would continue to determine appropriate uses for private lands. Private land stewardship actions and conservation efforts would continue to be voluntary on the part of the landowner.

Rim of the Valley Trail

Various agencies and organizations would continue to develop proposed segments of the Rim of the Valley Trail. Overall planning and implementation of the Rim of the Valley Trail would be supported by the NPS through technical assistance and partnership development. Planning would include careful coordination with existing agencies, organizations, and private landowners to ensure that trail alignments do not conflict with existing land uses and ownership. The NPS could develop and manage new segments of the Rim of the Valley Trail within the expanded boundary of SMMNRA.

Recreational Opportunities and Access

Inclusion in the NPS boundary would give NPS the authority to expend funds on creating new trails and other facilities where appropriate. As requested, and contingent on funding, the NPS would provide technical assistance to surrounding communities (the San Fernando Valley and other urban areas) to enhance access to SMMNRA and other open space areas

through trail connections and public transportation options and to increase the overall diversity of public parklands. The NPS would emphasize and promote the public health benefits of outdoor recreation. Expanding SMMNRA into urban areas to the north and east would provide new close-to-home opportunities for those communities that do not have adequate parks and recreation areas. The NPS could also coordinate and collaborate with the U.S. Forest Service's Southern California Consortium to conduct outreach on recreational and learning opportunities with local schools and youth.

Education and Interpretation

The lands within the proposed boundary adjustment in alternative C would provide new opportunities for educational and interpretive programs and more engagement of urban communities. The NPS would seek opportunities to coordinate interpretive and educational messaging and programs in partnership with existing agencies and organizations. Interpretive themes related to nationally significant resources throughout the Rim of the Valley Corridor area would be emphasized (e.g. biodiversity, geology, paleontology, technology, economic development, and the interaction between human culture and the environment). With the Los Angeles River and its tributaries providing close-to-home physical and recreational connections, watershed interpretive themes could also be emphasized. Cultural resources in downtown Los Angeles and other urban communities would also provide opportunities to interpret the rich cultural heritage of the region.

Resource Protection

The alternative C boundary adjustment would also add to SMMNRA numerous natural and cultural resources that would expand and enhance protection of significant resources within SMMNRA including portions of the Santa Monica-Sierra Madre wildlife corridor within the Simi Hills and Santa Susana Mountains. Numerous studies have documented the importance of this corridor for wildlife movement (Spencer et al. 2010, Penrod et al. 2006). Also included are native grasslands, more oak woodland types, and habitat for a range of additional rare and sensitive species in the Simi Hills and Santa Susana Mountains. The San Gabriel Mountains foothills included in alternative C contain alluvial fan sage scrub, a distinct and sensitive natural community that has adapted to the unique fluvial processes of the Los Angeles basin. The boundary adjustment would also include the Verdugo Mountains, and more connections to Griffith Park, as well as remnant riparian areas along the Los Angeles River which are important ecological stepping stones between the Santa Monica and San Gabriel mountains.

The boundary adjustment in alternative C would include significant cultural resources related to space exploration and the Cold War that are located in the Arroyo Seco corridor and Simi Hills. Other significant historical sites that reflect the settlement and economic development of the region include the Pico Well. No.4 National Historic Landmark, portions of the Butterfield Overland Trail, the Arroyo Seco Parkway, Route 66, and the El Pueblo de Los Angeles Historical Monument. The Simi Hills and Santa Susana Mountains contain numerous archeological sites, including rock art examples not found in the Santa Monica Mountains. Many sites of architectural significance would also be within the boundary adjustment, including the Gamble House National Historic Landmark in Pasadena.

With a focus on engaging urban populations, the NPS could create a network of partners to develop natural and cultural resource management programs that would engage the public through expanded citizen science, volunteer programs, education, and interpretation. The NPS could partner with stakeholders to develop a collaborative land protection program that includes both cooperative conservation planning tools and strategic land acquisition.

Including such resources in SMMNRA would allow the NPS to use its full range of tools and authorities for resource protection including land acquisition, inventorying and monitoring, and a variety of resource protection projects. The current inventory and monitoring program of SMMNRA would be expanded to include the new areas and would inform decision-making for resource management.

Operations and Maintenance

Existing land managers would continue to operate and manage their land and facilities. NPS would be responsible for operations and maintenance of lands that it acquires. Through cooperative management agreements, the NPS would have the opportunity to share staff, facilities and funding with partner agencies, streamlining operational efficiencies. Existing staff at SMMNRA would contribute toward operation of the expanded park area. However, additional staffing and expertise would be required for management of the new areas.

Funding and Costs

Initially, existing SMMNRA staff and operations would support the newly added areas. Initial staffing needs would primarily be for park planning, outreach, and coordination with other agencies and organizations. Increased staffing for the expanded SMMNRA would happen incrementally over time as implementation planning specifies objectives and as the NPS acquires land. Following completion of a management plan that would identify more specific goals for land protection, resource management, facilities, education, and outreach, more detailed operational costs and staffing needs would be identified. The annual NPS operating budget for the expanded SMMNRA in alternative C could range from $9.5-$10.5 million, an increase of $900,000-$1.9 million above SMMNRA's 2012 operating budget. The level of staffing needs would reflect the emphasis of future management (e.g. the amount and type of land acquired by NPS, ability to accomplish objectives through partnerships).

Alternative D: Regional Rim of the Valley Boundary Adjustment with Cooperative Conservation Areas

Concept

Alternative D includes a boundary adjustment to Santa Monica Mountains National Recreation Area (SMMNRA) and authority for NPS to provide technical assistance to surrounding local communities, agencies, and private landowners to maintain habitat connectivity, protect significant resources, and plan for new parks and trails.

The alternative D boundary adjustment would add 313,000 acres to SMMNRA's authorized boundary to connect large natural areas and promote long-term resiliency of the significant natural resources within SMMNRA and the broader study area. The boundary expansion would also provide more recreational opportunities. The SMMNRA boundary addition would include most areas within the Rim of the Valley Corridor with the exception of lands owned and managed by the U.S. Forest Service as part of the Angeles National Forest and San Gabriel Mountains National Monument.

For critical habitat linkages outside of the proposed boundary addition, SMMNRA would be authorized to partner and provide technical assistance to land managers and private landowners to maintain and enhance habitat connections to the national forests (as in alternative B).

Proposed Area

SMMNRA Boundary Adjustment

The boundary adjustment would add 313,000 acres to SMMNRA. Approximately 23% of the new area is currently protected by existing land management agencies and organizations (*Figure 5-4: Alternative D: Regional Rim of the Valley Boundary Adjustment with Cooperative Conservation*).

The proposed boundary adjustment would add most of the areas within the Rim of the Valley Corridor study area to SMMNRA. Areas that would be included are the Los Angeles River and Arroyo Seco corridors, the Verdugo Mountains-San Rafael Hills, the San Gabriel Mountain foothills, the Upper Santa Clara River, the Santa Susana Mountains, the Simi Hills, and the Conejo Mountain - Las Posas Hills. Areas within the Santa Monica Mountains Zone such as Griffith Park and the western escarpment of the Santa Monica Mountains near California State University Channel Islands would also be included. This boundary adjustment includes the Santa Monica-Sierra Madre wildlife corridor within the study area.

U.S. Forest Service managed lands would not be included in the boundary adjustment. The National Park Service (NPS) and U.S. Forest Service would explore partnership opportunities similar to the no action and the cooperative conservation partnerships alternatives.

Cooperative Conservation Areas

Habitat linkages between the study area and the Los Padres and Angeles national forests would not be part of the expanded SMMNRA. However, the NPS would be authorized to partner with and provide technical assistance to land managers and private landowners to maintain and enhance habitat connectivity (as in alternative B).

Management Approach

Management by existing agencies, local governments, organizations, private landowners, and institutions as described under the no action alternative would continue under alternative D. Agencies and local governments would maintain authorities and land management responsibilities. However, the NPS would become another partner in the management of the additional areas with authority to expend funds on land protection, visitor facilities, interpretive and educational programs, and inventorying and monitoring of resources within the area.

NPS Roles

The NPS would work collaboratively with public and private partners to protect significant resources, expand public enjoyment opportunities, and provide interpretation and education about the area's resources.

The NPS could expend funds on land acquisition, and the planning and development of visitor facilities such as trails, waysides, etc. Land acquisition would be completed in partnership with other agencies and organizations. Any NPS land acquisition would be targeted, with an emphasis on protecting significant resources, maintaining and enhancing habitat connectivity, and providing recreational opportunities. The NPS would only consider purchase of land from willing sellers. The NPS would have no land use regulatory authority for lands that it does not own.

To facilitate habitat connectivity between the study area and the Los Padres and Angeles national forests, the NPS would be authorized to engage in cooperative conservation partnerships and provide technical assistance to public and private landowners, organizations, and institutions north of the study area (similar to alternative B). There would be no NPS land acquisition or management of these areas.

As in alternatives B and C, NPS would also expand its capacity to provide technical assistance to agencies and organizations in the Rim of the Valley Corridor area to increase outreach efforts to local communities. NPS technical assistance could also be provided for natural resource protection and restoration, trail and park planning, and to bring agencies, organizations, and landowners together to achieve common goals.

Other Federal, State and Local Land Management Agencies and Organizations

New planning efforts would explore opportunities for agencies to collaborate and set shared goals for resource protection, connecting parklands and trails, restoration objectives, and providing coordinated interpretive and educational opportunities that highlight nationally significant resources in the newly added areas.

Implementation of conservation efforts for cooperative conservation areas outside of the SMMNRA boundary adjustment would be executed by state and local governments, private entities, and other federal agencies. The NPS would provide technical assistance to these agencies and organizations where needed.

Local Land Use Authorities

The SMMNRA boundary addition would not establish additional regulatory or land use authority over local governments. Local ordinances would continue to determine appropriate uses for private lands. Private land stewardship actions and conservation efforts would continue to be voluntary on the part of the landowner.

Non-Governmental Organizations and Private Land Stewardship

The NPS would work cooperatively with conservation organizations and private landowners upon request to undertake cooperative conservation efforts (easements, grants, technical assistance for best management practices, etc.) that do not require federal land acquisition.

For the cooperative conservation areas outside of the SMMNRA boundary addition, private land stewardship would be a key component of conservation efforts. An implementation plan would identify a range of private land stewardship strategies that could maintain habitat linkages and protect habitat if implemented. Private land stewardship actions would be voluntary on the part of the landowner.

Rim of the Valley Trail

Because the expanded SMMNRA would encompass the entire Rim of the Valley Trail, this would provide the NPS with opportunities to own or manage new segments of the trail throughout its planned route. Other agencies and organizations would continue to develop proposed segments of the Rim of the Valley Trail. Overall planning and implementation of the Rim of the Valley Trail could be supported by the NPS through technical assistance and partnership development. Planning would include careful coordination with existing agencies, organizations, and private landowners to ensure that trail alignments do not conflict with existing land uses and ownership.

Recreational Opportunities and Access

Inclusion in the SMMNRA boundary would give NPS the authority to expend funds on facilities to support recreation and public enjoyment. Because alternative D would also include larger areas of undeveloped open space, the NPS would evaluate and explore opportunities for acquiring lands to provide new recreational opportunities. As requested and contingent on funding, the NPS could provide technical assistance to surrounding communities (the San Fernando Valley and other urban areas) to enhance access to SMMNRA and other open space areas through trail connections and public transportation options and to increase the overall diversity of public parklands.

As in alternative C, expanding SMMNRA into urban areas northward and eastward would provide new close-to-home opportunities for those communities that currently do not have adequate parks and recreation areas. The NPS would conduct outreach to local communities, organizations, and schools to promote healthy recreation. The NPS could also coordinate and collaborate with the U.S. Forest Service's Southern California Consortium to conduct outreach on recreational and learning opportunities with local schools and youth.

Education and Interpretation

Educational and interpretive opportunities within the expanded SMMNRA would be similar to alternative C. The NPS would seek opportunities to coordinate interpretive and educational messaging and programs in partnership with existing agencies and organizations. Interpretive themes related to nationally significant resources throughout the Rim of the Valley Corridor area would be emphasized (e.g. biodiversity, geology, paleontology, technology, economic development, and the interaction between human culture and the environment). Cultural resources in downtown Los Angeles and other areas in the Rim of the Valley Corridor area provide new opportunities to interpret the rich cultural heritage of the region.

Topics currently interpreted at SMMNRA such as film production, Native American history and pre-history, and the significance of Mediterranean ecosystems would be expanded by the inclusion of new sites and resources. New cultural themes would include architecture, resource extraction and production, space exploration, astronomy, and the Cold War.





Resource protection efforts in alternative D would include long-term conservation of regional wildlife corridors. Similar to alternative C, alternative D would provide opportunities to engage urban audiences in recreation, education and interpretation. Photos: NPS.

Resource Protection

Significant cultural and natural resources described in the alternative C boundary adjustment would be included in alternative D. In addition to these resources, alternative D would include rare endemic plant and fossil resources associated with Conejo volcanic geologic features in the Conejo Mountain-Las Posas Hills area. This area also includes a western wildlife corridor connection to the Santa Susana Mountains. Alternative D would also include the Upper Santa Clara River area which is home to more sensitive plant community types than any other portion of the study area.

Within the boundary adjustment area, the NPS would partner with stakeholders to develop a collaborative land protection program that includes both cooperative conservation planning tools and strategic land acquisition. The current inventory and monitoring program of SMMNRA would be expanded to the new areas and would inform decision-making for resource management. The NPS could provide technical assistance in scientific study, restoration opportunities, and documentation of cultural and natural resources. Universities and other partners would be engaged to assist in building scientific knowledge to support decision-making.

The larger scope of alternative D provides the most opportunities for the NPS to play a direct role in long-term conservation of regional wildlife corridors through land acquisition and other means of land protection such as private land stewardship. Agencies and organizations within the added areas would continue to acquire lands for conservation and open space as permitted under existing authorities. The NPS would focus land acquisition on protection of core habitat areas in SMMNRA and in protecting critical wildlife corridors within the newly added areas.

Operations and Maintenance

NPS would be responsible for operations and maintenance of lands that it acquires. Existing land managers would continue to operate and manage their land and facilities. Through cooperative management agreements, the NPS would have the opportunity to share staff, facilities and funding with partner agencies, streamlining operational efficiencies. Existing staff at SMMNRA would contribute toward operation of the expanded park area. However, additional staffing and expertise would be required for management of the new areas.

Funding and Costs

Initially, existing SMMNRA staff and operations would support the newly added areas. Initial staffing needs would primarily be for park planning, outreach, and coordination with other agencies and organizations. Increased staffing for the expanded SMMNRA would happen incrementally over time as implementation planning specifies objectives and as the NPS acquires land. Following completion of a management plan that would identify more specific goals for land protection, resource management, facilities, education, and outreach, more detailed operational costs and staffing needs would be identified. The annual NPS operating budget for the expanded SMMNRA could range from $10-$12 million, an increase of $1.4-3.4 million above SMMNRA's 2012 operating budget. The level of staffing needs would reflect the emphasis of future management (e.g. the amount and type of land acquired by NPS, ability to accomplish objectives through partnerships).

Environmental Assessment

Background

Before taking an action, the National Environmental Policy Act (NEPA) requires federal agencies to identify a range of alternatives for that action and to analyze the potential environmental impacts of that action, including any potential adverse environmental effects that cannot be avoided if the proposed action is implemented. The NPS prepared an environmental assessment (EA) for the Rim of the Valley Corridor Special Resource Study to identify and analyze the potential environmental and socioeconomic consequences of each of the alternatives considered in the study.

Impacts

Consequences are determined by comparing likely future conditions under each alternative with the existing baseline conditions as described in the "no action" alternative. The analysis includes consideration of the context, intensity, and duration of direct and indirect effects of all the alternatives.

The NPS based analysis and conclusions on a review of existing literature, information provided by experts within the NPS as well as outside organizations, analysis of case studies of existing programs in other locations, and the professional judgment of the team members. The findings of this study will inform a recommendation by the Secretary of the Interior to Congress. If Congress takes action, then new environmental analysis would be undertaken prior to implementation actions. This new analysis would propose specific actions whose specific impacts would be assessed prior to implementation.

The NPS evaluated the environmental consequences of each alternative on the following topics: land use (including prime and unique farmlands and urban quality), paleontological resources, water resources, vegetation, wildlife, special status species, prehistoric and historic archeological resources, traditional cultural (ethnographic) resources, historic structures / cultural landscapes, visitor experience, park operations and partnerships, socioeconomics, and environmental justice.

The NPS finds that there would be no significant impacts associated with the proposed alternatives.

Environmentally Preferable Alternative

Implementing regulations for NEPA promulgated by the Council on Environmental Quality require that agencies identify "the alternative or alternatives which were considered to be environmentally preferable." According to the Council on Environmental Quality, the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources (46 FR 18026 - 18038). According to NPS Director's Order 12, through identification of the environmentally preferable alternative, the NPS and the public are faced with determining the relative merits of the choices before them as represented among the alternatives and must clearly state through the decision-making process what values and policies were used in reaching a decision. Based on analysis of the alternatives, the alternative that would best protect, preserve and enhance historic, cultural and natural resources based on analysis of NEPA Section 101-B criteria is alternative D. Therefore, alternative D is the environmentally preferable alternative.

Consistency with NEPA Section 101-B

NEPA Section 101-B requires analysis of the following criteria:

1. Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Ensuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. Preserving important historic, cultural and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;
5. Achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources. (NEPA Section 101(b))

Each of the alternatives would meet criteria 1-5 to some degree. In each alternative, the NPS would work to achieve its mandate to protect significant resources for the enjoyment of future generations, thus meeting criterion 1. However, alternatives C and D would meet criterion 1 to the greatest degree by expanding the NPS mandate to additional areas in the Rim of the Valley Corridor. Alternatives C and D would also best meet the intent of criteria 2 and 3 through offering greater opportunities to protect esthetically and culturally pleasing surroundings and through the expansion of beneficial uses of the environment such conservation, recreation, and other public enjoyment opportunities. Alternative D would best achieve criterion 4 as it would provide the opportunity to protect a greater amount of historic, cultural and natural resources that depict important aspects of our national heritage. All alternatives would likely meet the principles identified in criterion 5 as local, state, and federal conservation efforts would continue to provide recreational opportunities and protect open space that contribute to a high quality of life in the greater Los Angeles metropolitan

area. Alternatives C and D would best meet this criterion as the NPS could improve coordination of collaborative efforts to protect open space and directly contribute NPS resources for land protection efforts. Criterion 6 does not apply to the alternatives because there are no specific plans for projects that would use depletable resources.

Alternative C best meets criteria 1, 2, 3, and 5, while alternative D best meets all five of the applicable criteria and therefore would best meet the Section 101-B criteria. Alternative D would best protect, preserve, and enhance historic, cultural, and natural resources in the Rim of the Valley Corridor. Because alternative D best meets all five of the five applicable criteria, alternative D would best meet the Section 101-B criteria.

Next Steps

After the distribution of the *Rim of the Valley Corridor Draft Special Resource Study and Environmental Assessment*, there will be a minimum 60-day public review period. If no significant environmental impacts are identified and no major changes are made to the alternatives then a Finding of No Significant Impact (FONSI) would conclude the study process. The FONSI will include a final decision by the NPS (selected alternative). The Secretary of the Interior will then transmit the final study report consisting of the FONSI, including the selected alternative, and any technical corrections to the draft study report, to Congress, along with the Secretary's recommendations for the study area. At that time, the final recommendations will be made available to the public.

A special resource study serves as one of many reference sources for members of Congress, the NPS, and other persons interested in the potential designation of an area as a new unit of the national park system. In this study, the NPS will also provide information to Congress and other interested persons regarding the potential of a boundary adjustment for Santa Monica Mountains National Recreation Area. Readers should be aware that the findings and analysis contained in this special resource study do not guarantee the future funding, support, or any subsequent action by Congress, the Department of the Interior, or the NPS. Identification of an environmentally preferred alternative should not be viewed as a positive or negative recommendation by the NPS for any future management strategy or action.



Ranger led hike with youth in Santa Monica Mountains National Recreation Area. Photo: NPS.

INTRODUCTION

1



View of downtown Los Angeles and basin from Griffith Park. Photo: NPS.

Chapter 1: Introduction

An introduction to the purpose, scope, and issues of the study

Purpose

The Consolidated Natural Resources Act of 2008 (P.L. 110-229, May 2008) directed the National Park Service (NPS) to conduct a special resource study of the area known as the Rim of the Valley Corridor, which is described in this legislation as the area generally including the mountains encircling the San Fernando, La Crescenta, Santa Clarita, Simi, and Conejo Valleys in southern California (*Figure 1-1: Regional Context*). The legislation directed that the study determine (1) the suitability and feasibility of designating all or a portion of the corridor as a unit of the Santa Monica Mountains National Recreation Area; and (2) the methods and means for the protection and interpretation of this corridor by the National Park Service, other federal, state, or local government entities or private or non-profit organizations. The legislation is contained in *Appendix A: Study Legislation*.

To achieve the first objective, this study analyzes whether any portion of the Rim of the Valley Corridor study area is eligible to be designated as a unit of the national park system or added to the existing park unit of Santa Monica Mountains National Recreation Area (SMMNRA). To achieve the second objective the study analyzes the methods and means for protecting and interpreting the natural and cultural resources of the study area by the National Park Service, other federal, state, and local government entities and/or private and non-profit organizations.

The study was prepared following the process established by the National Park System New Area Studies Act (P.L. 105-391, 16 U.S.C. Sec.1a-5), contained in *Appendix B: New Areas Studies Act*. This law requires that special resource (new area) studies be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321-4347). The determination of whether any part of the study area qualifies as an addition (or boundary adjustment) to an existing unit of the national park system is based on criteria for boundary adjustments as described in NPS *Management Policies 2006* (Section 3.5), contained in *Appendix C:* NPS *Management Policies 2006*.

Establishing a new unit of the national park system or expanding the boundary of SMMNRA would require Congressional action.

The study legislation also requires the Secretary of the Interior to document the process used to develop the *SMMNRA Fire Management Plan* and all activity conducted pursuant to the plan designed to protect lives and property from wildfire. This documentation can be found in *Appendix G: Process Used to Develop the 2005 Santa Monica Mountains National Recreation Area Fire Management Plan and Environmental Impact Statement*.

Need

In this multi-pronged study, the study team sought to understand the location, character and condition of resources in the corridor, their relationship to SMMNRA, and the range of issues associated with their protection and interpretation. While much of this information and analysis is related to both study objectives, the definition of issues facing the Rim of the Valley Corridor was necessary in order to identify potential roles for the NPS and other federal, state, and local government entities or private and non-profit organizations, as called for in objective two of the study legislation. Four main issues were identified through comments received during public scoping, legislative testimony for the authorizing legislation (Shaddox 2007), and resource inventories.

The four main issues are:

1. ensuring long-term conservation of nationally significant resources;
2. protecting or enhancing the remaining wildlife and plant habitat connections within the Rim of the Valley Corridor;

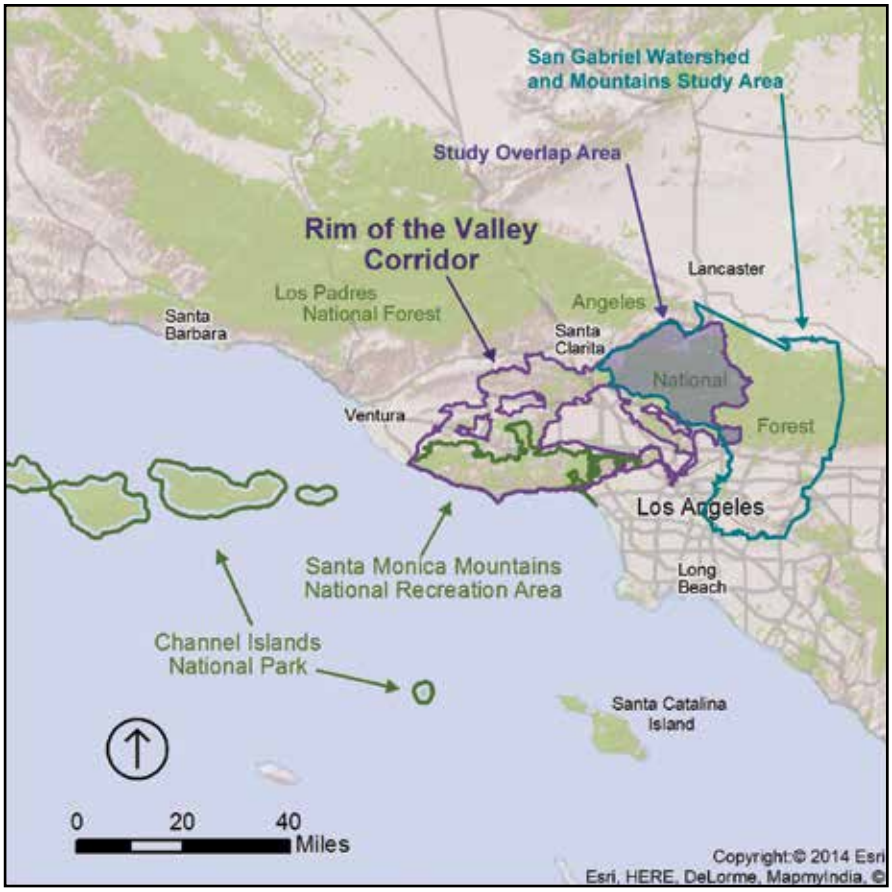


Figure 1-1: Regional Context

3. preserving and enhancing access to recreational opportunities and open space in the study area for visitors and residents in the second largest metropolitan area in the country; and
4. providing regional coordination to complete the Rim of the Valley Trail system and achieve other resource conservation goals.

Further explanation of the nature of these issues is provided following the description of the study area.

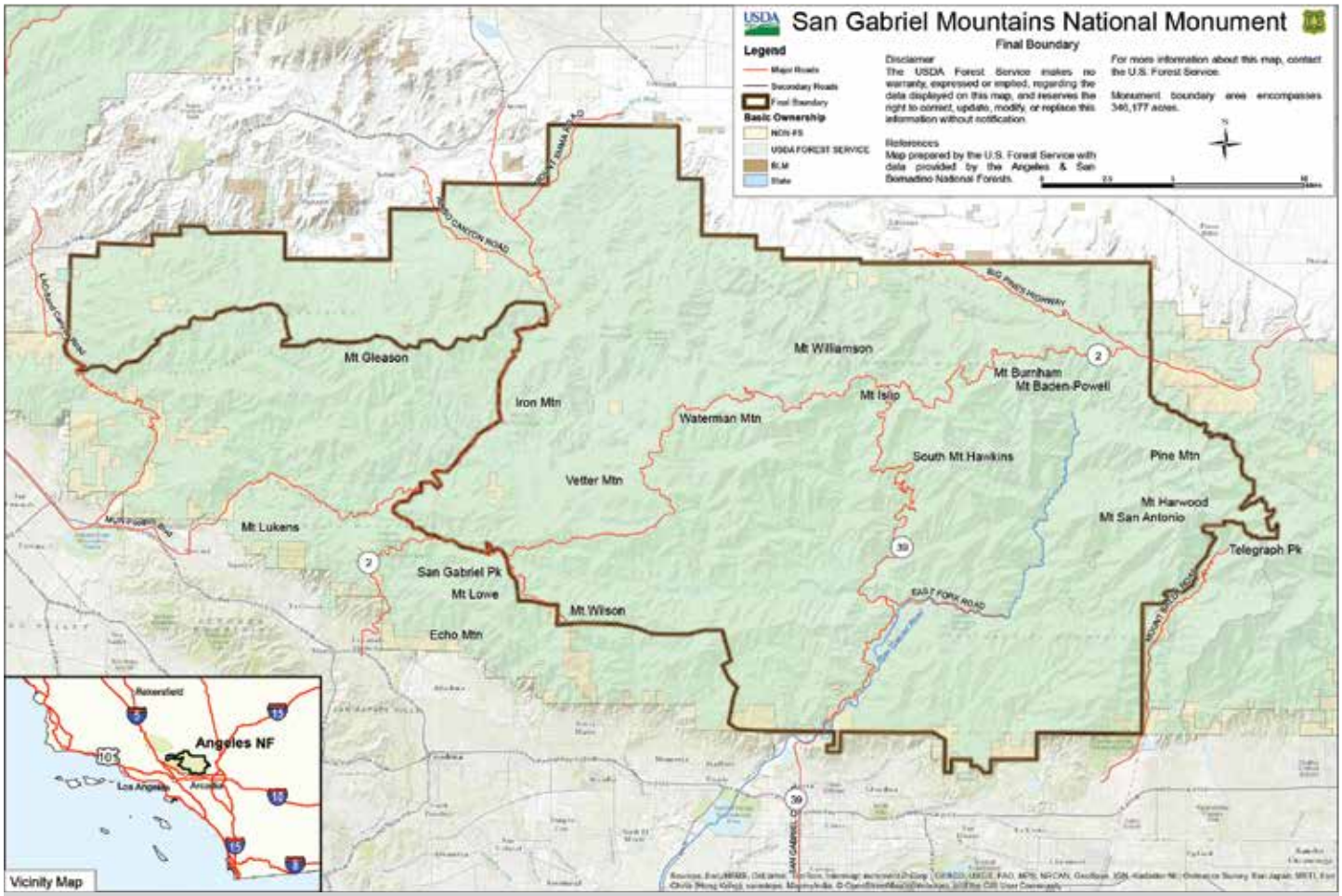
Study Area

The study legislation directed the NPS to conduct a special resource study of the area known as the Rim of the Valley Corridor, generally including the mountains encircling the San Fernando, La Crescenta, Santa Clarita, Simi, and Conejo Valleys in southern California. The National Park Service defined the area for study by examining the study act's legislative history and intent, through public documents that use the term "Rim of the Valley Corridor," and through the public scoping process. The team determined that the area "known as the Rim of the Valley Corridor" refers to the State of California's *Santa Monica Mountains Conservancy Zone - Rim of the Valley Corridor* map first approved by the State of California in 1984. This map was adopted as the study area for this special resource study (*Figure 1-2: Study Area*).

The study area covers more than 1,000 square miles (650,000 acres) in two counties in the greater Los Angeles metropolitan region. It includes some of the most densely populated and diverse areas of the United States. Seventy-four percent of the study area is located in Los Angeles County and 26% is located in Ventura County. Spanning both Los Angeles and Ventura counties, the study area includes portions of the Santa Monica Mountains, Simi Hills, Santa Susana Mountains, Verdugo Mountains, San Rafael Hills, and San Gabriel Mountains.

Portions of at least 27 communities are located in the study area, with approximately 5.1 million residents. The greater Los Angeles metropolitan region is home to more than 18 million residents. The largest communities in the study area with populations over 100,000 residents include the cities of Los Angeles (3.8 million), Glendale (192,000), Santa Clarita (176,000), Pasadena (137,000), and Burbank (103,000) in Los Angeles County and the cities of Thousand Oaks (127,000) and Simi Valley (124,000) in Ventura County (*Figure 1-3: Cities and Communities*).

The majority of the lands in the study area (approximately 84%) are undeveloped open space or areas protected for conservation and recreation purposes. Federally protected areas within the study area include Santa Mounica Mountains National Recreation Area (SMMNRA), a unit of the national park system, the Angeles National Forest, and the San Gabriel Mountains National Monument (U.S. Forest Service) comprise a little over one-half of the study area lands. The study area also contains highly developed urban areas primarily located along the Los Angeles River and Arroyo Seco corridors and along some hillsides that are adjacent to the urbanized valleys/population centers.



Relationship to the San Gabriel Watershed and Mountains Special Resource Study

In 2003, Congress directed the NPS to study resources within the San Gabriel Mountains and Watershed to determine whether all or part of the area is eligible for designation as a unit of the national park system. The study area covered approximately 700,000 acres of land in the greater Los Angeles Metropolitan Area. A portion of the area evaluated in the San Gabriel Watershed and Mountains Special Resource Study, the western San Gabriel Mountains and portions of the Upper Santa Clara River, is also included in the Rim of the Valley Corridor study area (*Figure 1-1: Regional Context*).

The NPS completed the *San Gabriel Watershed and Mountains Special Resource Study* in April 2013. The study recommends: 1) designation of a San Gabriel Unit of SMMNRA (50,000 acres) that would include areas of the San Gabriel and Rio Hondo river corridors and the Puente-Chino Hills; 2) additional federal recognition, tools, and support for the Angeles National Forest; 3) collaboration between the USFS and the NPS to protect the significant resources of the San Gabriel mountains and watershed; and 4) NPS technical assistance to interested communities, agencies, and organizations to protect the region's wildlife corridors and provide close-to-home recreational opportunities (*Appendix H: San Gabriel Watershed and Mountains Special Resource Study & Environmental Assessment Findings and Recommendations* for final recommendations and map).

In the interest of efficiency and consistency, this study has adopted the analysis and final recommendations of the *San Gabriel Watershed and Mountains Special Resource Study* for these areas. Those findings are restated throughout the document where appropriate.

San Gabriel Mountains National Monument

On October 10, 2014, President Obama established the San Gabriel Mountains National Monument which became the eighth U.S. Forest Service national monument. The Antiquities Act of 1906 grants the President or Congress the authority to designate national monuments in order to protect "objects of historic or scientific interest." Located primarily in the Angeles National Forest, the monument is 346,177 acres (USFS 2014). The national monument recognizes the area's important geological, ecological, historic, scientific and recreational resources and is expected to bring additional resources to the area to improve visitor opportunities.

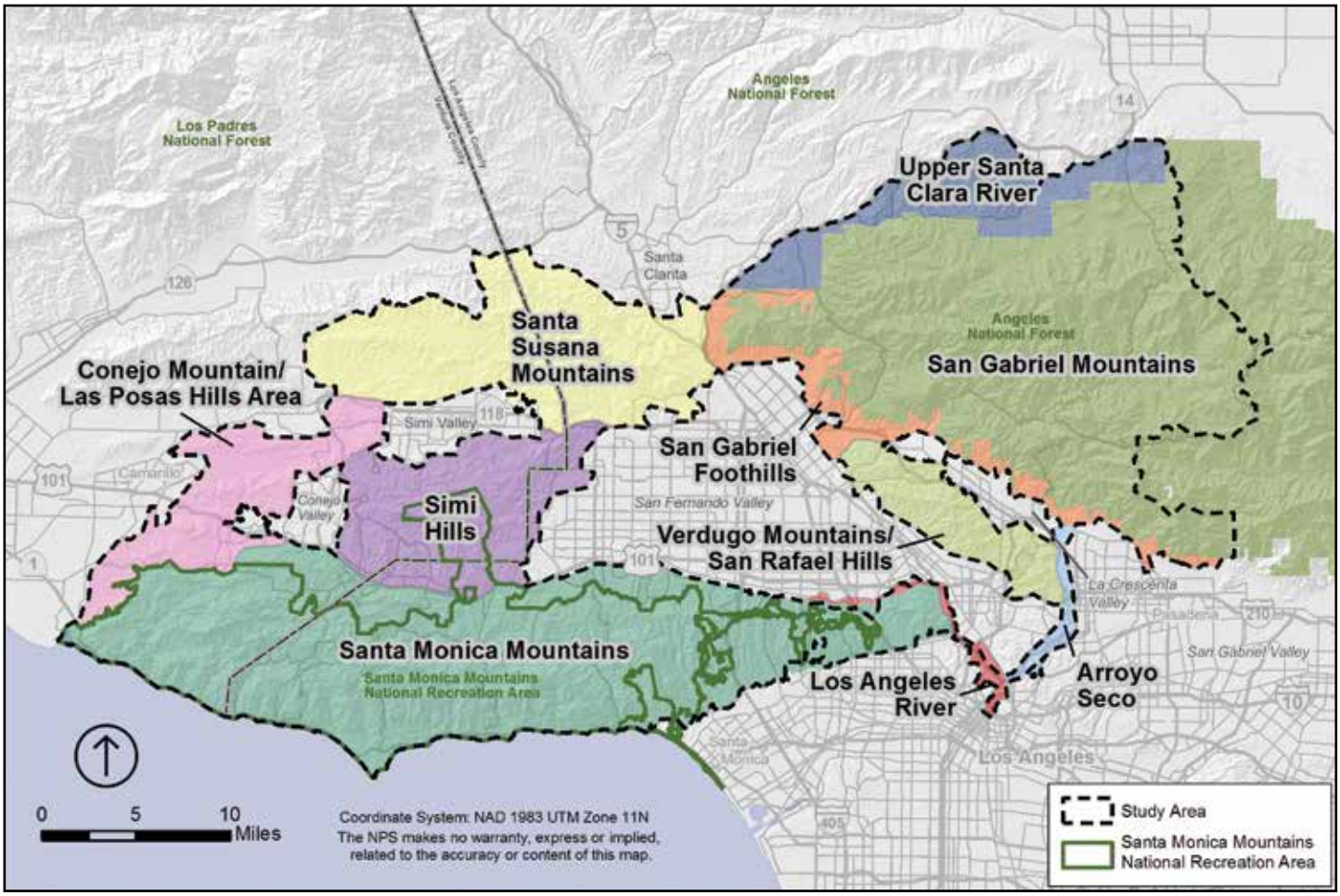


Figure 1-2: Study Area

As a whole, the study area is approximately 50% privately owned and 50% publicly owned. Of the 650,000 acre-study area, approximately one-quarter (approximately 153,000 acres) is within SMMNRA. Within the SMMNRA boundary, approximately 45% (70,000 acres) of the land is privately owned with the remaining 55% (84,000 acres) in public ownership. NPS owns approximately 15% (23,000 acres) of the land within SMMNRA. The remaining publicly owned land is held by the State of California and local government agencies. Several communities and entire cities, such as the City of Malibu, lie within the SMMNRA boundary. As described on pages 20 and 21, SMMNRA is managed through a unique partnership with other land management agencies. The U.S. Forest Service (USFS) manages approximately one-quarter of the study area (180,000 acres in the San Gabriel Mountains) as part of the Angeles National Forest and San Gabriel Mountains National Monument.

Although federally-protected areas exist within the study area, the intent of Congress in authorizing the study was not to reconsider those designations, but rather to look at the area holistically to determine whether any areas are appropriate to add to SMMNRA, and to explore a variety of means for the protection and interpretation of this corridor by the full range of agencies and organizations working in the area (*Appendix A: Study Legislation*).

Rim of the Valley Corridor Subareas

Together, the mountains within SMMNRA, the Angeles National Forest, and San Gabriel Mountains National Monument serve as large natural areas that provide the majority of the study area's core habitat for native plant and wildlife species. The network of mountains, rivers and streams that connect these two large areas provide additional habitat and corridors that connect the region's core habitat areas. The study area is also near, but does not connect to, the Los Padres National Forest and the northern portion of the Angeles

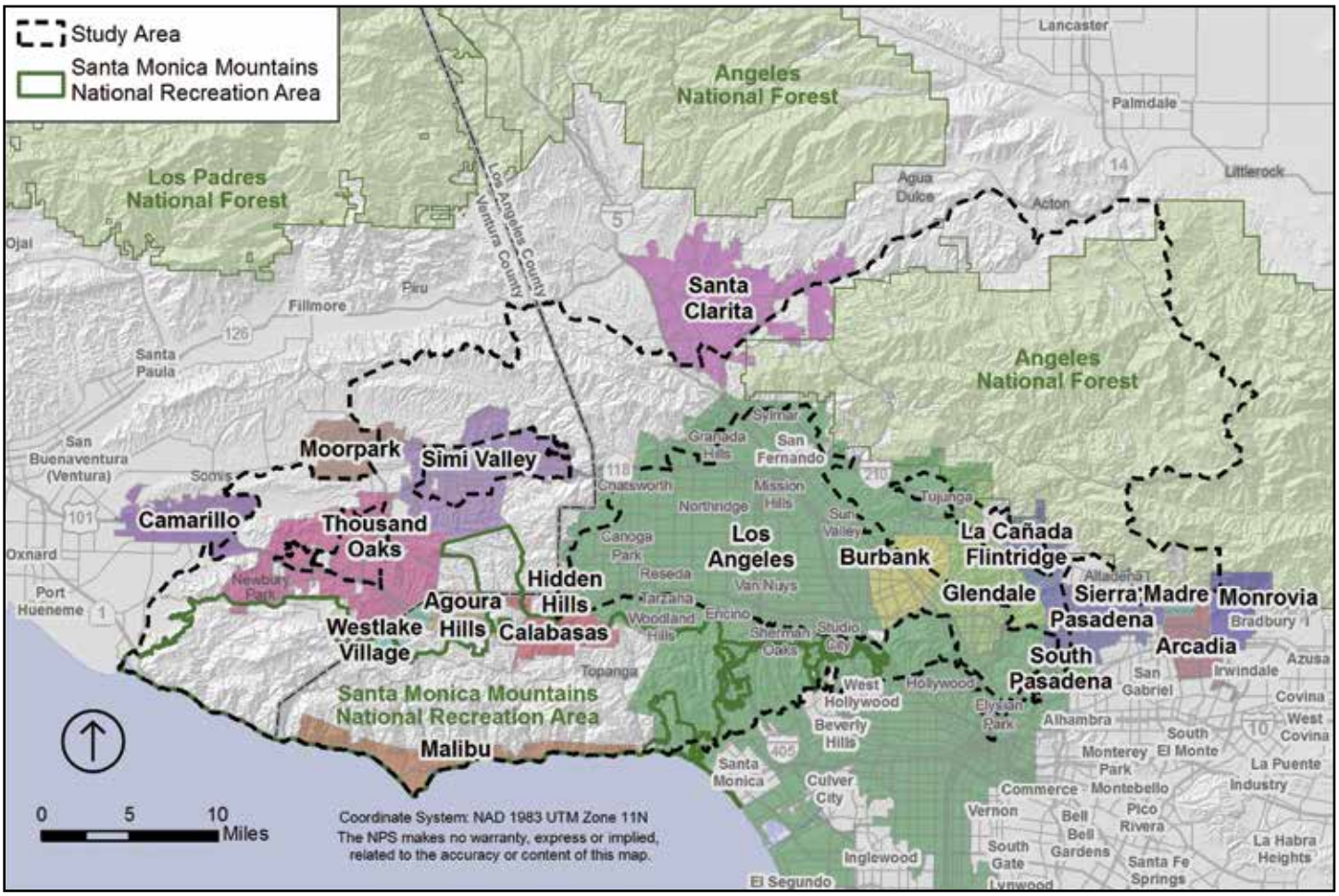


Figure 1-3: Cities and Communities

National Forest that includes portions of the Sierra Pelona. The mountain ranges and physiographic subareas are described on the following pages. The subareas are referenced frequently in the draft study report.

Issues

Through comments received in public scoping, legislative testimony for the authorizing legislation (Shaddox 2007), and resource inventories, the study team identified four main issues associated with the protection and public enjoyment of resources in the study area.

Protection of Nationally Significant Natural and Cultural Resources

Santa Monica Mountains National Recreation Area (SMMNRA) protects one of the best remaining examples of the Mediterranean ecosystem in North America. Mediterranean ecosystems are among the world's rarest and most endangered land types, occurring in only five locations in the world that support high levels of biodiversity. Key resources related to this important ecosystem but outside the park are generally unprotected. The relatively intact plant and wildlife populations of the area are especially impressive considering their location within the second largest metropolitan area in the United States.

Beyond wildlife and habitat, many other significant resources in the Rim of the Valley Corridor are related to resources in SMMNRA. The condition of park resources could be enhanced if related resources within the Rim of the Valley Corridor are protected. These include historic sites, archeological resources, paleontological resources, and geologic resources associated with the Transverse Ranges Province.

Loss of Habitat Connectivity

Perhaps the greatest threat to natural resource preservation in SMMNRA is the loss of habitat connectivity from increased development and urban encroachment. Over time, large

Rim of the Valley Corridor Subareas

Santa Monica Mountains

This subarea is bound by the Oxnard Plain on the west, and the Los Angeles River on the east. The northern edge of the Santa Monica Mountains is approximately defined by U.S. Route 101, the Simi Hills, and the San Fernando Valley, with the southern edge defined by the Pacific Ocean and Los Angeles basin. Approximately 50% of the Santa Monica Mountains is conserved as protected open space with another 40% that is open space in private ownership. The remaining areas are developed with a combination of urban, suburban, commerial or industrial uses (Stoms et al. 2012).



Landscape view of Circle X Ranch in Santa Monica Mountains National Recreation Area. Photo: NPS.

Conejo Mountain-Las Posas Hills

This subarea, located to the north of the western Santa Monica Mountains, includes the area around Conejo Mountain (also referred to as the Conejo Hills) and Las Posas Hills surrounding the southern, western, and northern edges of Conejo Valley. This subarea is bound to the north by California State Route 118, to the south by the boundary of SMMNRA, to the east by Olsen Road, and to the west by Santa Rosa Valley and Calleguas Creek. This area includes a number of large protected areas and also has the largest percentage of agricultural lands of all the geographic subareas.



Wildwood Mesa is public open space located in the Conejo Mountain area. Photo: NPS.

Simi Hills

The Simi Hills subarea includes the hills bordered by Simi Valley and the Santa Susana Mountains to the north, the San Fernando Valley to the east, the Santa Monica Mountains to the south, and the Conejo Valley to the west. Although bordered by urban development, the Simi Hills includes a large amount of open space. Portions of the Simi Hills are included in SMMNRA. Though surrounded by development, the Simi Hills comprise a large block of protected public land.



View of the Santa Monica Mountains from the Simi Hills. Photo: NPS.

Rim of the Valley Corridor Subareas (continued)

Santa Susana Mountains

This subarea extends from the western edge of the Oxnard Plain, eastward to Newhall Pass, which divides the Santa Susana and San Gabriel mountains. The Santa Clara River Valley defines the northern edge of this subarea, with Simi Valley, the Simi Hills, and the San Fernando Valley bordering the southern edges. The Santa Susana Mountains are primarily undeveloped open space.



The 4,800 acre Rocky Peak Park in the Santa Susana Mountains between Chatsworth and Simi Valley includes the 4,400-acre Runkle Ranch formerly owned by entertainer Bob Hope. Photo: NPS.

Upper Santa Clara River

This portion of the study area is bound by the Angeles National Forest to the south, the study boundary, approximately defined by California State Route 14 to the north, and the Newhall Pass area to the west. Much of the area is privately owned with the exception of noncontiguous public lands managed / owned by the Bureau of Land Management, California State Parks and local jurisdictions, much of this area is privately owned.



Riparian vegetation is often found in and along the Upper Santa Clara River and its tributaries. Photo: NPS.

San Gabriel Foothills and Mountains

This San Gabriel Foothills includes the lower elevations of the San Gabriel Mountains outside of the boundaries of the U.S. Forest Service managed areas, and to the south of California State Route 14. These foothills include a mosaic of land uses including protected open space, residential, institutional and commercial development. The San Gabriel Mountains subarea is defined by the boundaries of the San Gabriel Mountains National Monument to the north and west; the Angeles National Forest to the west and south; and by the study boundary to the east. The primary use in the U.S. Forest service managed areas is recreation, but these areas also contain utility easements, communications facilities, and infrastructure related to flood protection and water supply.



View of the San Gabriel Mountains and foothills as seen from the Verdugo Mountains. The mostly developed La Crescenta Valley lies between these mountains. Photo: NPS.

Rim of the Valley Corridor Subareas (continued)

Verdugo Mountains-San Rafael Hills

This subarea includes the mountains and hills that are bound by the San Fernando Valley to the west, the La Crescenta Valley to the east, and the Arroyo Seco to the south. The Verdugo Mountains forms a largely undeveloped island in the midst of a highly urbanized landscape. The San Rafael Hills are divded from the Verdugo Mountains via a canyon. Private homes are scattered throughout the San Rafael Hills, which are bordered to the east by the Arroyo Seco.



The Verdugo Mountains afford views of downtown Glendale with downtown Los Angeles in the background. Photo: NPS.

Arroyo Seco

This subarea includes the Arroyo Seco canyon and corridor, from Hahamongna Watershed Park in Pasadena at the base of the San Gabriel Mountains, downstream to the confluence with the Los Angeles River. The Arroyo Seco stream is primarily bordered by public parkland surrounded by highly urbanzied areas. The hillsides at the edges of the Arroyo Seco canyon include a mixture of residential development interspersed with canyon and hillside open spaces and parks.



The Arroyo Seco corridor extends from the San Gabriel Mountains to the confluence wiht the Los Angeles River, passing through urban communities. Photo: NPS.

Los Angeles River

This subarea includes the Los Angeles River corridor from Sepulveda Dam Basin in the San Fernando Valley to downtown Los Angeles, including El Pueblo de Los Angeles Historical Monument. The areas surrounding the Los Angeles River are mostly urbanized with scattered pocket parks along the river. Exceptions include the Sepulveda Dam Basin, managed by the U.S. Army Corps of Engineers with the City of Los Angeles; Griffith and Elysian parks, managed by the City of Los Angeles; Rio de Los Angeles State Park; and Los Angeles State Historic Park. Through Sepulveda Dam Basin and the 11-mile Glendale Narrows/Elysian Valley, the river is characterized by natural surface channel bottoms and vegetation. The study also considers a narrow stretch of the river corridor from Sepulveda Dam Basin west to the Simi Hills. Though not part of the authorized study area, this river reach is examined because of similarities to the river sections within the study area and the opportunities for recreational connections between local communities and the Rim of the Valley Corridor. Generally, public comments showed support for consideration of this area as portions of this corridor were included in one of the management options presented to the public in 2012.



In 2013, the Los Angeles River reach through the Glendale Narrows was officially opened for recreation including kayaking, fishing and nature viewing. Previously, public access was limited to the trail along the levee. Photo: NPS.

open space areas have become increasingly fragmented and isolated resulting in threats to the viability of native plant and animal populations including rare, threatened, and endangered species, and rare or unusual plant communities and habitat.

There has been a growing awareness of the need to protect broader landscapes to sustain wildlife and natural habitat. Movement through contiguous habitat is essential to wildlife survival, whether it be the day-to-day movements of individuals seeking food, shelter, or mates, dispersal of offspring to find new homes, or seasonal migration to find favorable conditions. Movement is also essential for gene flow, for recolonizing unoccupied habitat after a local population goes extinct, and for species to shift their geographic range in response to global climate change (Penrod et al. 2006).

The habitat value for large mammals at SMMNRA depends in part on its continued connectivity to larger blocks of natural land to the north, through the Simi Hills, the Santa Susana Mountains and beyond to the Los Padres National Forest in the Sierra Madre (Coast Range) Mountains and the Angeles National Forest in the San Gabriel Mountains (Stoms et al. 2012).

Protecting existing open space for resource protection is a challenge given the area's continuing population growth, high land values, and development pressures. With a combined population of over 10 million, Los Angeles and Ventura counties include some of the fastest growing and most densely populated areas in the United States (*Figure 1-4: Population Density and Ethnicity*). Another 4 million residents are expected in southern California by 2035. Additional land will be needed to accommodate this growth (SCAG 2012).

Recreational Opportunities and Open Space are Distributed Unevenly Across the Corridor

With regional population growth, demand for recreational opportunities has increased. Existing park, open space and recreation areas are unevenly distributed, with the fewest park areas in low income communities of color and areas with high numbers of children. Lack of adequate transportation options further impacts access to existing open space and recreation areas. Much of metropolitan Los Angeles is considered to be park deficient because it has less than three acres of green space per 1,000 residents. Some of these park-poor neighborhoods lie along the Los Angeles River portions of the study area or in the San Fernando Valley. The communities of Camarillo, Oxnard and Port Hueneme west of the study area are also considered park-poor (The City Project 2011).

Numerous plans and studies have identified the need for additional parks and open space, as well as a more interconnected multi-use trail system and a coordinated regional trail plan, including for the Rim of the Valley Trail system. Increased access to open space could



View of the eastern Santa Susana Mountains from Elsmere Canyon in the San Gabriel foothills. The network of freeways and roads through Newhall Pass present challenges for habitat and wildlife connectivity between the Santa Susana and San Gabriel Mountains. NPS photo.

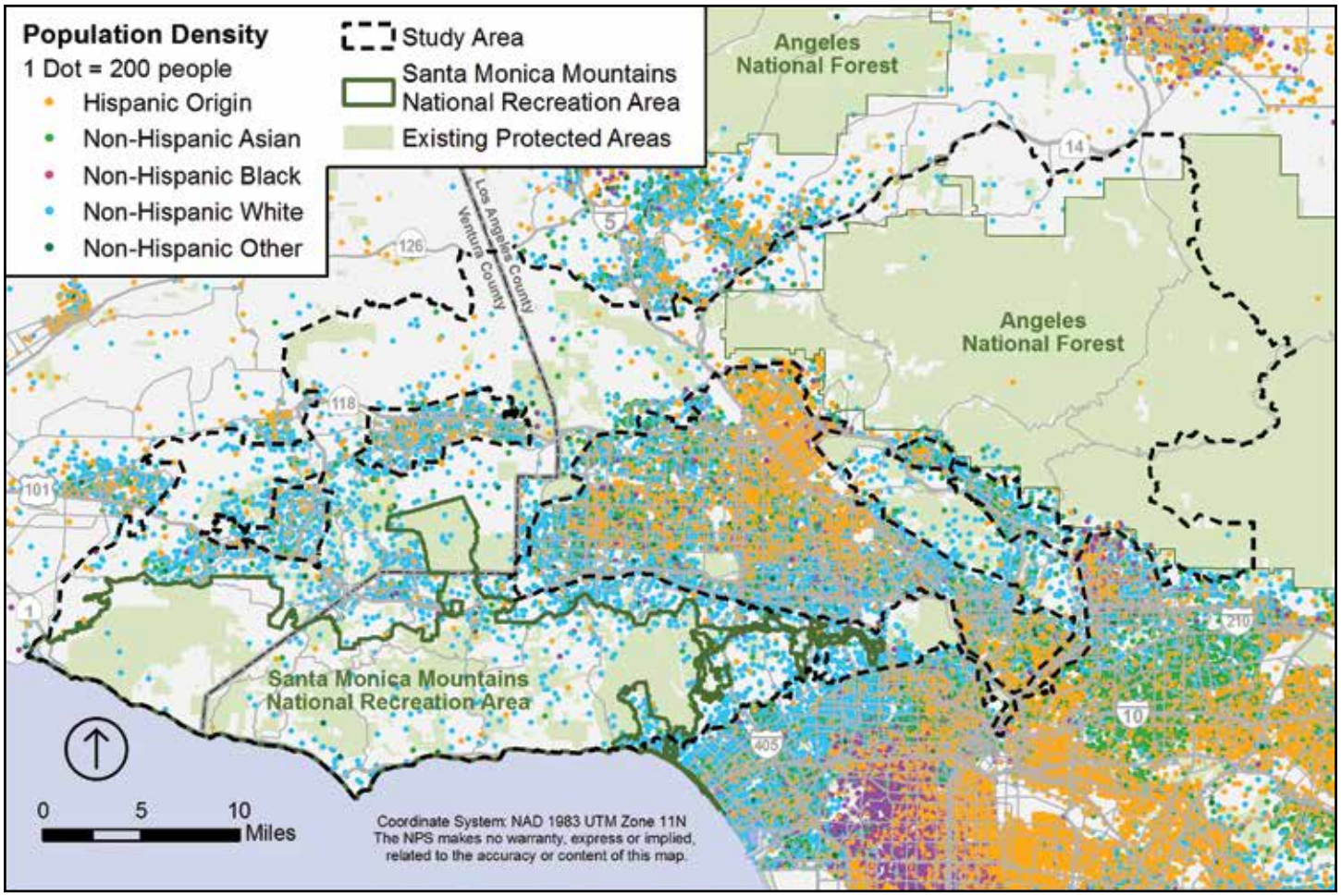


Figure 1-4: Population Density and Ethnicity

provide much needed places for respite and renewal for people within the greater Los Angeles metropolitan area.

Providing a Framework for Regional Coordination

The study area includes a diverse array of land managers and resource management agencies. Many different federal, state, and local governments and agencies manage parks, open space, and other public land uses within the study area which expands across two counties and approximately 27 local governments. As a result, a variety of projects and plans exist for different portions of the study area. These projects involve different landowners and differing management goals. Better coordination may be needed among these entities. For example, because the Rim of the Valley Trail crosses many of these jurisdictions, a high level of coordination among agencies and landowners is required. This trail system, if completed, could be available to the millions of people in the second largest metropolitan area in the United States, thereby providing more close-to-home outdoor recreational experiences. Such coordination within SMMNRA has led to the near completion of the 65-mile Backbone Trail that follows the ridgeline of the Santa Monica Mountains.

Study Process

The study process includes two separate, parallel analyses, one that focuses on the potential creation of a new unit of the national park system; and a second that focuses on potential adjustment of the existing boundary of Santa Monica Mountains National Recreation Area (SMMNRA). It should be noted that there is a certain amount of overlap between the criteria for a new park unit and the criteria for a boundary adjustment. Both sets of criteria require proposals to be feasible and to demonstrate a need for direct NPS management instead of management by other entities.

New Park Unit Evaluation

This special resource study evaluates the Rim of the Valley Corridor Study Area as a potential new unit of the national park system based



The study team coordinated with natural and cultural resource experts to analyze the significance of resources in the study area. As part of a workshop, resource experts visited Laskey Mesa in the Simi HIlls, shown above. NPS photo.

on established criteria. A proposed addition to the national park system will receive a favorable recommendation from the NPS only if it meets all of the following four criteria for inclusion (NPS *Management Policies 2006*):

1. it possesses nationally significant natural or cultural resources;
2. it is a suitable addition to the system;
3. it is a feasible addition to the system; and
4. it requires direct NPS management, instead of alternative protection by other public agencies or the private sector.

The complete analysis of the Rim of the Valley Corridor study area under these criteria can be found in *Chapter 3: New Park Unit Evaluation*.

SMMNRA Boundary Evaluation

This study also evaluates the potential of including all or a portion of the study area as part of SMMNRA through an extension of the SMMNRA boundary. For the Secretary of the Interior to recommend any portion of the Rim of the Valley Corridor study area as an addition to SMMNRA, the area must meet one of the following criteria (NPS *Management Policies 2006*):

- Protect significant resources and values or enhance opportunities for public enjoyment related to park purposes; or
- Address operational and management issues, such as the need for access or the need for boundaries to correspond to logical boundary delineations such as topographic or other natural features or roads; or
- Otherwise protect park resources that are critical to fulfilling park purposes.

The addition needs to:

- Be a feasible addition to the national park system—the criteria is the same as the feasibility criteria for special resource studies listed above; and
- Require direct NPS management that cannot or will not be accomplished by another government entity or by the private sector.

The analysis of the Rim of the Valley Corridor study area using boundary expansion criteria can be found in *Chapter 4: Boundary Adjustment Evaluation*.

Public and Stakeholder Involvement

Consistent with the study legislation and the National Environmental Policy Act (NEPA), public comment opportunities were provided at key points, including during scoping, preliminary findings and alternative concepts. The NPS also met with interested parties as needed throughout the study process. A detailed description of public and stakeholder involvement in the study process is included in *Chapter 7: Consultation and Coordination*.

Project Initiation and Public Scoping

At the beginning of the study process, the NPS initiated a notice of public scoping in the *Federal Register* (Vol. 75, No. Number 167 (Monday, August 30, 2010), pp. 52969-52971). Through the public scoping process, including nine public meetings with over 400 attendees, and receipt of over 2,000 comments, the NPS study team identified the range of issues to be addressed by the study and potential impacts of concern to the public. These issues are defined in the previous purpose and need section and in *Chapter 5: Alternatives*, and explained further through the environmental impact analysis in *Chapter 6: Environmental Consequences*.

Resource Analysis and Preliminary Alternatives Development

Following the public scoping process, the NPS study team conducted interviews with resource experts and gathered existing literature to analyze the significance of the natural and cultural resources in the study area and their suitability for inclusion in the national park system as a new park unit. The NPS also conducted analysis to determine if any portion of the study area met the NPS criteria for a boundary adjustment to SMMNRA. The NPS conducted a workshop with an interdisciplinary team of resource professionals familiar with the study area to identify resources of national significance and to generate ideas for preliminary alternative concepts that explored a variety of management approaches for the area by NPS and other entites.

Although some of the natural and cultural resources in the study area met the significance and suitability criteria for new park areas, the NPS preliminarily determined that a boundary expansion to SMMNRA would be less costly and more efficient than establishment of a new stand-alone park area. In general, the public agreed with this finding. The NPS published preliminary findings and alternative concepts in *Newsletter #3*.

Following the public comment period on preliminary alternatives, the NPS determined that an environmental assessment (EA) is a sufficient level of environmental impact analysis for this study. No significant impacts are anticipated from the findings and recommendations of this study.

Alternatives Development

Based on public comment on the preliminary findings for significance, suitability and feasibility, and the preliminary alternative concepts, the study team developed the range of alternatives presented in this draft study report. The study evaluates four alternatives: a "No Action" alternative (required by the National Environmental Policy Act), a cooperative conservation alternative with no additional NPS authority for land acquisition or direct land management, and two alternatives that include boundary additions to SMMNRA. These alternatives consider only management approaches that respect private property rights and the authorities that currently belong to existing local, state and federal agencies. The two boundary expansion alternatives extend the management model for SMMNRA, which is based on a public-private framework where the NPS is a minor landowner (15%) and much of the land within the boundary (50%) remains private property. A full description of the study alternatives can be found in *Chapter 5: Alternatives*.

Draft Report Publication, Review and Transmittal of Final Study Findings

Publication of the *Rim of the Valley Corridor Draft Special Resource Study and Environmental Assessment* will be followed by a minimum 60-day public comment period. If no significant environmental impacts are identified and no major changes are made to the alternatives then a Finding of No Significant Impact (FONSI) would conclude the study process. The FONSI will include a final decision by the NPS (selected alternative). The Secretary of the Interior will then transmit the final study report consisting of the FONSI, and any technical corrections to the draft study report, to Congress, along with the Secretary's recommendations for the study area. At that time, the final recommendations will be made available to the public.

Related Plans and Studies

This section describes the range of plans, studies, and initiatives that provide guidance and resource information for this special resource study. Because the study area includes numerous federal, state, and local governments, not every plan or study is described in detail here. Rather, this section provides an overview of those plans most pertinent to this study.

NPS Plans and Special Studies

America's Great Outdoors: A Promise to Future Generations (February, 2011)

In April 2010, President Obama launched the America's Great Outdoors Initiative. Listening sessions were held in communities throughout America to initiate a dialogue about conservation, including a youth listening session at Rio de Los Angeles State Park, and a general public listening session at Occidental College, both in Los Angeles. The America's Great Outdoors report, *A Promise to Future Generations*, is a result of that dialogue. The report





The Juan Bautista de Anza National Historic Trail is one of two designated national historic trails that passes through the study area. A plaque marking and commemorating the Anza Trail is located in Griffith Park. NPS photo.

outlines ways in which the federal government will help empower local communities to accomplish their conservation and recreation priorities. Many of the initiatives and recommendations overlap with the goals of this study including: 1) connecting Americans to the great outdoors, 2) conserving and restoring America's great outdoors, and 3) working together for America's great outdoors.

NPS Call to Action (revised, 2013)
A Call to Action: Preparing for a Second Century of Stewardship and Engagement describes specific goals and measurable actions that chart a new direction for the National Park Service as it enters its second century in 2016. The vision and framework for the future of the NPS includes many initiatives that overlap with the goals of this study including: 1) emphasis on close-to-home parks and open space in urban areas, 2) adding sites to the system that present untold stories of the nation's diverse natural and cultural history and 3) increased emphasis on landscape conservation and connectivity efforts at a regional scale.

Santa Monica Mountains National Recreation Area General Management Plan (2003)
The *Santa Monica Mountains National Recreation Area General Management Plan* provides a 20-year framework for the collective management of SMMNRA by the National Park Service, California State Parks, and the Santa Monica Mountains Conservancy. The plan describes the nationally significant natural and cultural resources of the Santa Monica Mountains and provides desired outcomes and conditions for those resources and for the visitor experience in the national recreation area.

Santa Monica Mountains National Recreation Area Interagency Trail Management Plan Environmental Impact Statement/ Environmental Impact Report (underway)
The *SMMNRA InteragencyTrail Management Plan* will present a long-term vision for recreation trails in the Santa Monica Mountains, including trail circulation, alignment and use designations with the goal of facilitating a safe, enjoyable, and jurisdictionally seamless recreational experience for trail users that also protects natural and cultural resources. The plan will guide trail decisions for the primary land management agencies in SMMNRA, including the National Park Service, California State Parks, Santa Monica Mountains Conservancy and Mountains Recreation & Conservation Authority.

San Gabriel Watershed and Mountains Special Resource Study and Environmental Assessment (2013)
In 2003, Congress directed the NPS to study resources within the San Gabriel Mountains and Watershed to determine whether all or part of the area is significant, suitable, and/or feasible for designation as a unit of the national park system. As described on page 2, a portion of the area evaluated in this special resource study, the western San Gabriel Mountains and portions of the Upper Santa Clara River, is also included in the Rim of the Valley Corridor study area. In the interest of efficiency and consistency, this study has adopted the analysis and final recommendations of the San Gabriel Watershed and Mountains Special Resource Study for these areas. *Appendix H: San Gabriel Watershed and Mountains Special Resource Study & Environmental Assessment Findings and Recommendations* contains the study's final recommendations.

Juan Bautista de Anza National Historic Trail and Old Spanish National Historic Trail Comprehensive Trail Management Plans
Two national historic trails traverse the study area, the Juan Bautista de Anza National Historic Trail (NHT) and the Old Spanish NHT. In addition to the historic trail route, the National Park Service administers both a recreational and auto route for the Juan Bautista de Anza NHT that crosses through the Simi Hills and the Santa Monica Mountains. The Old Spanish NHT also passes through and ends in the Rim of the Valley Corridor study area, terminating near downtown Los Angeles. This historic route from Santa Fe, New Mexico to Los Angeles is jointly managed by the Bureau of Land Management and the National Park Service. Both the Old Spanish and Juan Bautista de Anza NHTs are interpreted at El Pueblo de Los Angeles Historical Monument in downtown Los Angeles. Management of the NHTs is guided by their respective comprehensive trail management plans (CMP). The *Juan Bautista de Anza NHT Comprehensive Management and Use Plan* was completed in 1996. The NPS is working on completion

of a comprehensive trail management plan for the Old Spanish NHT.

Butterfield Overland Trail Special Resource Study/Environmental Assessment (underway)
In 2009, Congress directed the NPS to evaluate potential designation of the historic routes pioneered by John Butterfield and the Butterfield Overland Stage Company as they traveled over the "ox-box route" between the eastern termini of St. Louis, Missouri and Memphis, Tennessee and the western terminus of San Francisco, California (Sec. 7209 of P.L. 111-11). Stages traveled over this route between 1858 and 1861. The study is currently underway. The NPS completed public scoping for the special resource study in 2012 including a public meeting at the Wells Fargo History Museum in Los Angeles.

Route 66 Corridor Preservation Program
The Route 66 Corridor Preservation Program provides technical assistance and grants to historic features along Route 66 which ends in the City of Santa Monica. The program collaborates with private property owners; nonprofit organizations; and local, state, federal, and tribal governments to identify, prioritize, and address Route 66 preservation needs. It provides cost-share grants for the preservation and restoration of the most significant and representative properties dating from the route's period of outstanding historical significance, 1926 through 1970. The program serves as a clearinghouse of preservation information, and provides limited technical assistance.

Other Federal Planning Efforts and Studies

U.S. Forest Service - Southern California National Forests Land Management Plan (2005)
This *Land Management Plan* guides forest managers in site-specific planning and decision-making for the Angeles National Forest, including policies for the types of activities and special designation that can occur within each national forest. Subsequently designed and implemented project level decisions must be consistent with the direction described in the plan. In 2013, the Angeles, Los Padres, and two other national forests proposed to amend their land management plans with new guidance for roadless area management and land management plan monitoring, including recommendations for wilderness designation by completing a Supplemental Environmental Impact Statement. A draft Record of Decision was released in January, 2014.

National Aeronautics and Space Administration (NASA) – Final Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory (March, 2014)
The proposed action described in this plan is to demolish existing structures and to remediate soil and groundwater contamination on the 451-acre NASA-administered property of the Santa Susana Field Laboratory (SSFL) in the Simi Hills. The purpose of the proposed action is to remediate the environment to a level that meets NASA's environmental cleanup responsibilities and to undertake the demolition actions necessary to support both remediation and property disposition of the NASA-administered portion of SSFL. This property is within the Rim of the Valley Corridor study area. A signed Record of Decision (ROD) was issued in April 2014. The most immediate actions proposed are to dismantle the Coca Test Stands and associated features in the Coca historic district, and complete soil and groundwater clean-up feasibility studies as determined in the ROD and conduct archeological testing as prescribed in the Programmatic Agreement that is attached to the ROD.

Other Santa Susana Field Laboratory Clean-Up Plans (underway)
There are two additional planning and environmental compliance efforts underway that cover portions of the Santa Susana Field Laboratory (SSFL). One environmental plan that is underway is the Department of Energy's Environmental Impact Statement that will consider options for cleanup of Area IV and the Northern Buffer Zone at the Santa Susana Field Laboratory (SSFL). In addition, the State of California Department of Toxic Substances Control is preparing a Programmatic Environmental Impact Report (EIR) for contaminated soil and groundwater remediation projects at SSFL.

U.S. Army Corps of Engineers and the City of Los Angeles – Los Angeles River Ecosystem Restoration Feasibility Draft Study and Environmental Impact Statement/ Environmental Impact Report (underway)
This study evaluates alternatives for the purpose of restoring 11 miles of the Los Angeles River from approximately Griffith Park to downtown Los Angeles, while maintaining existing levels of flood risk management. Restoration measures considered include creation and reestablishment of historic riparian strand and freshwater marsh habitat to support increased populations of wildlife and enhance habitat connectivity within the study area, as well as to provide opportunities for connectivity to ecological zones, such as the Santa Monica Mountains, Verdugo Hills, Elysian Hills, and San Gabriel Mountains. The study also evaluates opportunities for passive recreation compatible with the restored environment. The U.S. Army Corps of Engineers released a draft feasibility study and environmental impact statement/environmental impact report in September 2013. The study area is entirely within the study area.

U.S. Army Corps of Engineers and County of Los Angeles - Arroyo Seco Watershed Ecosystem Restoration Study (underway)
The primary purpose of this study is to evaluate solutions to a variety of water and land-related issues in the watershed, including ecosystem degradation, flooding, and poor water quality along the lower Arroyo Seco. The study area, an 11-mile reach of the lower Arroyo Seco is entirely within the Rim of the Valley Corridor study area. The Arroyo Seco watershed study area extends from the Angeles National Forest border through the unincorporated community of Altadena, and cities of La Cañada Flintridge, Pasadena, South Pasadena, and Los Angeles, to approximately 0.5 miles from the confluence with the Los Angeles River.

State Plans

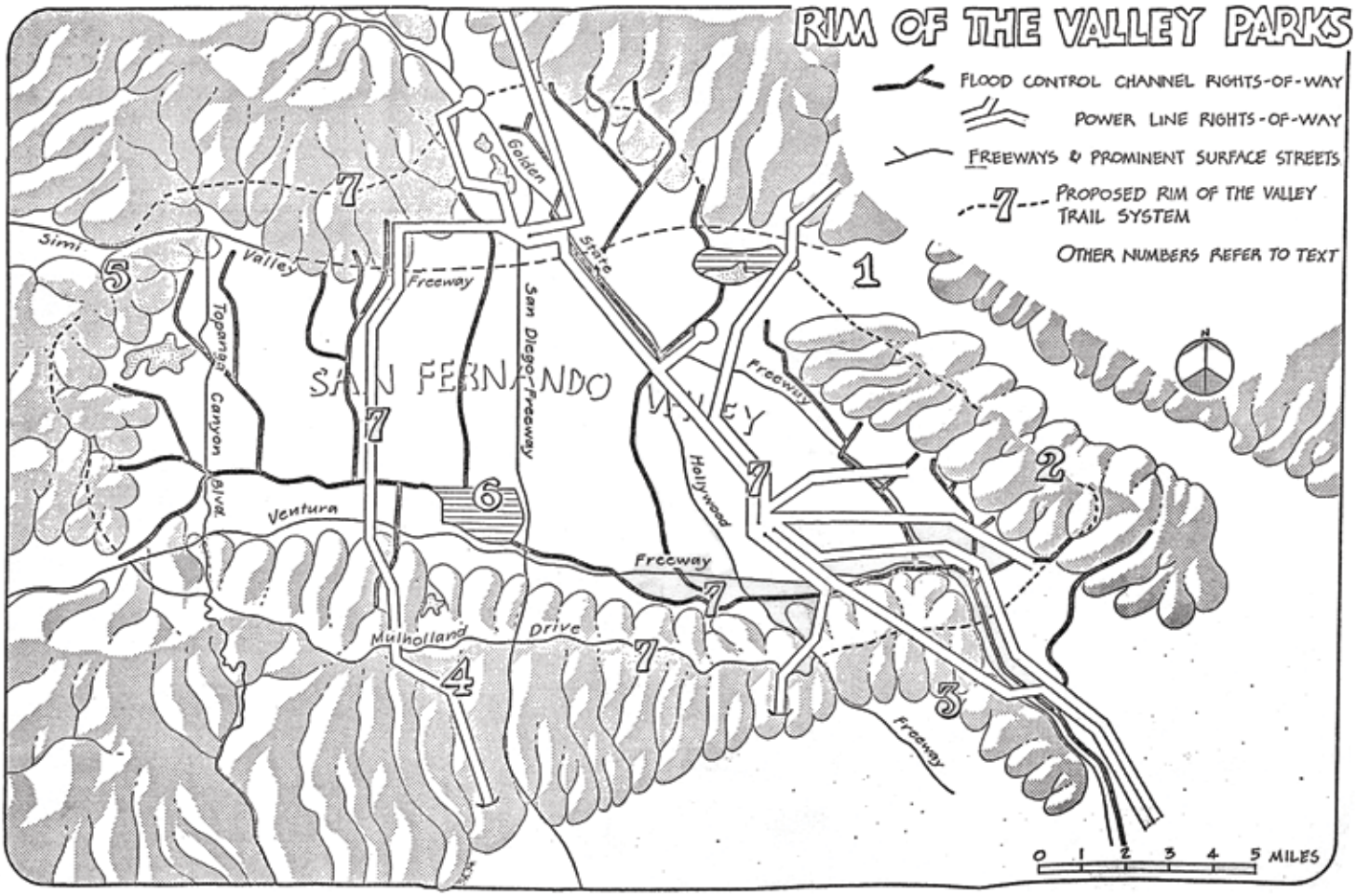
California State Parks General Plans
Within SMMNRA there are five state parks with approved general general plans. These plans describe park resources and provide direction for resource protection and visitor use. These parks are Malibu Creek State Park, Point Mugu State Park, Topanga State Park, Leo Carrillo State Park, and Will Rogers State Historic Park. Within the Rim of the Valley Corridor study area outside of SMMNRA there are four state parks with approved general plans. State parks include Santa Susana Pass State Historic Park, Los Encinos State Historic Park, Rio de Los Angeles State Park, and Los Angeles State Historic Park.

State Land Conservancy Plans
The Santa Monica Mountains Conservancy has several planning documents that guide priorities for management and acquisition in the study area. These include the *Rim of the Valley Trail Corridor Master Plan* (1990) and the *Santa Monica Mountains Comprehensive Plan* (1979).

Common Ground: From Mountains to the Sea (2001) is a joint plan undertaken by two California state land conservancies, the San Gabriel and Lower Los Angeles rivers and Mountains Conservancy, and the Santa Monica Mountains Conservancy. The *Common Ground* plan articulates a vision for the watersheds of the San Gabriel and Los Angeles Rivers and provides a framework for future watershed and open space planning. A key component of the plan is a set of guiding principles, which provide overarching goals for future open space planning in both watersheds.

Local Plans

Los Angeles County Draft 2035 General Plan (underway)
The *Los Angeles County 2035 General Plan* update will provide the policy framework for how and where the unincorporated parts of the county will grow through 2035. The general plan update includes goals, policies, implementation programs, and ordinances, including draft recommendations for expanding "Significant Ecological Areas" (SEA) throughout the county. A SEA designation is given to land that contains irreplaceable biological resources. Individual SEAs include undisturbed or lightly disturbed habitat supporting valuable and threatened species, linkages and corridors to promote species movement, and are sized to support sustainable populations of their component species. The objective of the SEA Program is to preserve the genetic and



The original Rim of the Valley Trail vision, illustrated above, was articulated in the master's thesis prepared by Marge Feinberg entitled, "Rim of the Valley Park Proposals for a Green Belt Around the San Fernando Valley." The Santa Monica Mountains Conservancy developed a master plan for the trail in 1990. Drawing by Marge Feinberg, 1976, California State University, Northridge.

physical diversity of the county by designing biological resource areas capable of sustaining themselves into the future. Although SEAs are not preserves, they are areas where the county deems it important to facilitate a balance between development and resource conservation.

Ventura County General Plan (2005)

The *Ventura County General Plan*, last updated in 2005, sets forth the goals, policies and programs that manage future growth and land use for the unincorporated areas of Ventura County.

Integrated Regional Water Management Plans

Each of the two counties in the study area has an integrated regional water management plan. The purpose of the *Greater Los Angeles County Integrated Regional Water Management Plan* (IRWMP) the *Integrated Water Resource Plan for Ventura County* is to improve water supplies, enhance water supply reliability, improve surface water quality, preserve flood protection, conserve habitat, and expand recreational access in the each county. These plans also define a comprehensive vision for each county designed to generate local funding, to position the area for future state bonds, and to create opportunities for federal funding.

County of Los Angeles Department of Parks and Recreation - Santa Susana Mountains Trail Master Plan (underway)

The *Santa Susana Mountains Trail Master Plan* will promote and encourage safe and enjoyable recreation trail opportunities for hikers, mountain bikers and equestrians. The plan will identify connections to existing local, state, regional and national trail systems, as well as make connections to existing trailheads and points of interest. This plan includes the

Rim of the Valley Trail in the Los Angeles County portion of the Santa Susana Mountains and is a proposed amendment to the Los Angeles County General Plan.

City of Los Angeles - Los Angeles River Revitalization Master Plan (2007)
The City of Los Angeles' Department of Public Works created the *Los Angeles River Revitalization Master Plan* which presents a 20-year blueprint for development and management of the Los Angeles River. The objectives of the plan include: 1) the establishment of environmentally sensitive urban design guidelines, land use guidelines, and development guidelines for the river zone, 2) environmental improvements to water quality and ecological functioning of the river, 3) increased public access to the river, 4) increased recreation and open space, including new trails, and 6) enhanced flood control.

Other Local Plans
In addition to the planning initiatives described above, there are numerous approved local planning documents that provide policy guidance in the study area. These include the local coastal plans for Los Angeles County, Ventura County, and the City of Malibu; the *Santa Monica Mountains North Area Plan* (Los Angeles County); and land use planning documents for the incorporated cities that are within or near the study area. Unincorporated areas are governed by county comprehensive and zoning plans. Some plans such as the *Mulholland Scenic Parkway Specific Plan* (City of Los Angeles, 1992) also provide more detailed guidance. Additionally, local and regional park and recreation districts have adopted plans and studies. For example, the Pleasant Valley Recreation and Parks District recently completed a trail and greenway planning study.

Other Relevant Plans

Santa Clara River Plans
There are several conservation plans for the Santa Clara River including the *Santa Clara River Enhancement and Management Plan* (Ventura County Watershed Protection District and Los Angeles County Department of Public Works 2005), and the *Santa Clara River Upper Watershed Conservation Plan* (The Nature Conservancy 2006). These conservation plans provide strategies for collaborative, strategic conservation actions to conserve the unique natural heritage of the upper (east of Piru Creek) Santa Clara River watershed.

Wildlife Corridor Studies
The California Department of Fish and Game and CalTrans commissioned a team to produce a statewide assessment of essential habitat connectivity using the best available science, data sets, spatial analyses and modeling techniques. The goal of the study, titled *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California* (February 2010), was to identify large remaining blocks of intact habitat or natural landscape and model linkages between them that need to be maintained, particularly as corridors for wildlife.

The *South Coast Missing Linkages Project: A Linkage Design for the Santa Monica – Sierra Madre Connection* (2006) identifies habitat linkages between parkland and open space between Santa Monica Mountains National Recreation Area and the Los Padres National Forest. The report was coauthored by South Coast Wildlands and the National Park Service in cooperation with the Santa Monica Mountains Conservancy, The Nature Conservancy, and California State Parks.

About Santa Monica Mountains National Recreation Area

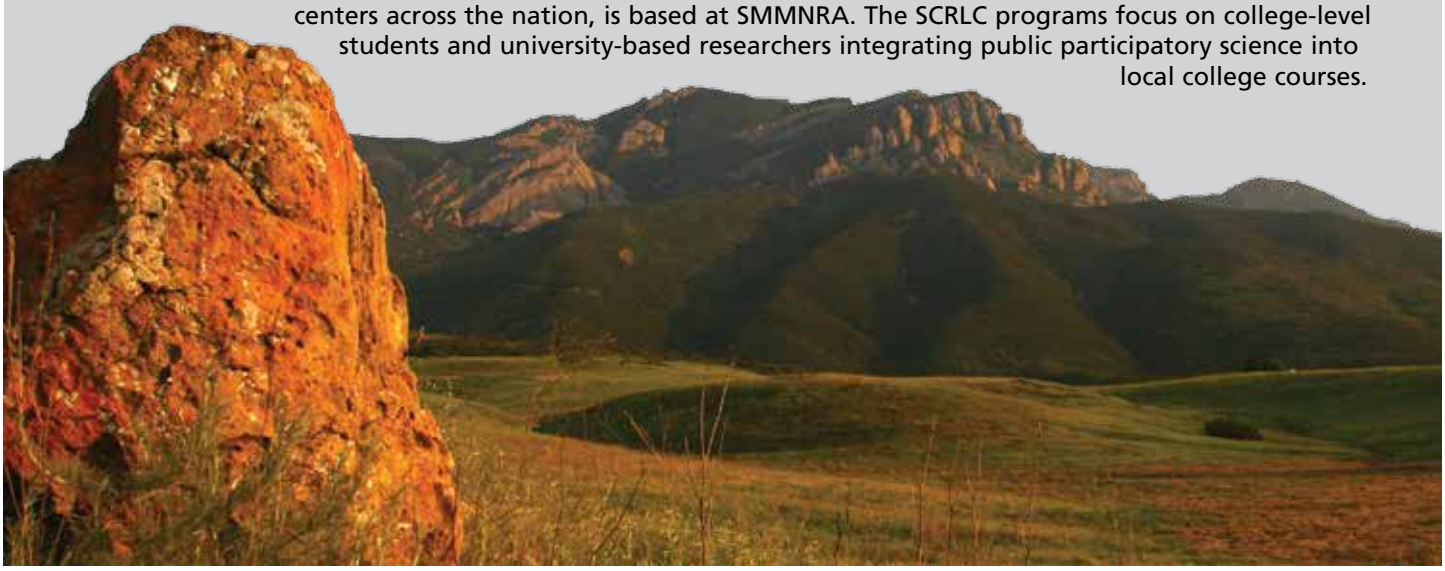
Santa Monica Mountains National Recreation Area (SMMNRA), the nation's largest urban national park, extends from Point Mugu east to the Hollywood Hills and includes a portion of the Simi Hills to the north. The Simi Hills function as an important wildlife corridor between the Santa Monica and the Santa Susana mountains. The U.S. Congress granted the National Park Service the authority to promote a level of shared management of the national recreation area. Administratively, SMMNRA is a cooperative effort that joins federal, state, local park agencies with non-profit organizations and private landowners to protect resources and provide public enjoyment opportunities. Since the establishment of SMMNRA in 1978, public lands within the Santa Monica Mountains have increased from 22% to 52%. Today, roughly 80,000 acres of the land within the 153,250-acre SMMNRA are preserved for resource protection and/or public enjoyment. While the National Park Service (NPS) shares responsibility for management of the national recreation area, it currently has direct responsibility for 15% of the land (23,500 acres).

A cooperative management agreement with the Santa Monica Mountains Conservancy, Mountains Recreation and Conservation Authority, and California State Parks provides a framework for the NPS to share resources and responsibilities for public land management. The participating parties in the cooperative management agreement have benefited from both efficiency and cost savings from implementation of cooperative operating procedures, practices, and law enforcement (both resource and visitor protection), as well as from standardizing signs and rules, where possible, which promotes less confusion and improved convenience for visitors.

Santa Monica Mountains Zone
SMMNRA's 1978 authorizing legislation also established the Santa Monica Mountains Zone (SMMZ). The SMMZ incorporates watersheds and canyon slopes associated with, but not formally included in SMMNRA, as well as the easternmost portion of the Santa Monica Mountains encompassing Griffith Park. Local and state agencies are responsible for land use regulations within this zone (including within the park boundary), but the NPS retains, by law, reviewing authority on projects involving federal funds, permits, or licenses that may affect the recreation area. This authority was provided by Congress to reduce downstream impacts on recreation area resources when possible.

Outreach and Assistance
SMMNRA management activities in areas beyond the current national recreation area include projects that further SMMNRA's defined purpose. Current efforts include urban outreach and resource management cooperation and assistance. For example, SMMNRA recently established an outreach office in downtown Los Angeles in the historic Old Plaza in El Pueblo de Los Angeles Historical Monument to provide opportunities to better connect the resources and recreational opportunities of SMMNRA to surrounding urban communities.

SMMNRA resource management professionals share data and expertise with other agencies and organizations and partner on regional conservation efforts such as the South Coast Missing Linkages Project and the SMMNRA carnivore study which has provided important information on how large predators like bobcats and mountain lions cope with urban development. Various agencies and organizations in the region have benefited from this work. Additionally, the Southern California Research Learning Center (SCRLC), one of 17 NPS research learning centers across the nation, is based at SMMNRA. The SCRLC programs focus on college-level students and university-based researchers integrating public participatory science into local college courses.



Santa Monica Mountains National Recreation Area Foundation Statement

Every unit of the national park system will have a foundational document to provide basic guidance for planning and management decisions—a foundation for planning and management. The core components of a foundation document include a brief description of the park as well as the park's purpose, significance, fundamental resources and values, other important resources and values, and interpretive themes.

The NPS is currently in the process of completing a foundation document for SMMNRA. The following components of SMMNRA's foundation statement describe the national recreation area's purpose, based on its authorizing legislation, and what aspects of the park are nationally significant. Fundamental resources and values and other important resources and values as well as the interpretive themes that provide guidance on the primary stories or messages conveyed at SMMNRA are described in *Chapter 2: Resource Description*.

Park Purpose

The purpose statement identifies the specific reason(s) for establishment of a particular park. The purpose statement for Santa Monica Mountains National Recreation Area was drafted through a careful analysis of its enabling legislation and the legislative history that influenced its development. The national recreation area was established when the enabling legislation adopted by Congress was signed into law on November 10, 1978.

> *Santa Monica Mountains National Recreation Area is a collaborative partnership that protects a mosaic of natural resources, cultural heritage, and scenery within North America's Mediterranean biome, and provides public enjoyment opportunities, including connections to wild places in the greater Los Angeles metropolitan area.*

Park Significance

Significance statements express why a park's resources and values are important enough to merit designation as a unit of the national park system. These statements are linked to the purpose of Santa Monica Mountains National Recreation Area, and are supported by data, research, and consensus. Statements of significance describe the distinctive nature of the park and why an area is important within a global, national, regional, and system-wide context. They focus on the most important resources and values that will assist in park planning and management.

The following significance statements have been identified for Santa Monica Mountains National Recreation Area:

- Influenced by the mild climate and complex geologic setting, Santa Monica Mountains National Recreation Area contains high concentrations of rare, sensitive, and endemic species, and represents one of the best remaining examples of the Mediterranean biome in North America. Mediterranean ecosystems are among the world's rarest and most endangered land types, occurring in only five locations throughout the world.
- The coastal and mountainous terrain of Santa Monica Mountains National Recreation Area offers an abundance of recreational, health, and educational benefits and contributes clean air and water for the Los Angeles Region. Its proximity to one of the most densely populated regions of the United States provides a gateway to experience national park sites and other public parklands.
- The Santa Monica Mountains provide an opportunity for understanding how to protect high biodiversity in a vast urban area. Additionally, the rich concentration of resources, which include an extensive range of native vegetation communities, archeological sites, and geologic and paleontological features, are all in close proximity to numerous research institutions, providing exceptional opportunities for scientific study.
- Native American occupation in the Santa Monica Mountains spans more than 10,000 years, as reflected in a diversity of well-preserved archeological sites. American Indian groups, including the Chumash and Tongva, continue to have cultural ties to these resources and their associated landscapes.
- Extending from Point Mugu to downtown Los Angeles, the rugged landscape and geologic features of the Santa Monica Mountains serve as an urban refuge and offer a variety of exceptional vistas from expansive ocean and mountain views and urban skylines to secluded canyons and miles of seashore.
- Santa Monica Mountains National Recreation Area's varied coastal and mountain landscapes, in close proximity to Hollywood, played a significant role in the film industry's transition from studio production to on-location filming, as represented by Paramount Ranch, one of the best remaining examples of an early movie ranch. These landscapes continue to provide backdrops for film production today.







RESOURCE DESCRIPTION 2

Top left: Oak woodland vegetation in Simi HIlls. Top right: Students at Audubon Center at Debs Park. Bottom: Detail of the front door of the Gamble House. Photos: NPS.

Chapter 2: Resource Description

This chapter describes the study area's natural, cultural, and recreational resources.

Introduction

The study area includes a diverse array of natural, cultural, and recreational resources. This chapter provides an overview of these resources as context for the new national park unit analysis described in *Chapter 3*, and the boundary expansion analysis presented in *Chapter 4* of this document. Additionally, this chapter describes the affected environment that is analyzed for environmental impacts in *Chapter 6*.

Geographic Scope

Generally, the resources described in this chapter correspond to those resources located within the 650,000-acre study area. However, in some cases the resource description goes beyond the study area to more fully describe the resources in their broader contexts. For example, the mountain systems within the study area are part of the Transverse Ranges Geomorphic Province which extends beyond the study area. For biological resources, where wildlife corridors and habitats extend beyond the study area, those areas are also described.

Physical Resources

Climate

The southern California region experiences a Mediterranean-type climate associated with areas located between the 30th and 45th parallels of latitude and on western continental borders (Bailey 1966). These areas are affected by subtropical high pressure masses that create a drought environment during summer, but shrink in winter, allowing storms to occur along the coast. Only two percent of the earth's surface has this type of climate. In addition to southern California, there are four other regions of the earth that experience Mediterranean-type climates including the Mediterranean basin, central Chile, the Cape Region of South Africa and the southern and western areas of Australia. Marine influences keep the coast cool in the summer and prevent it from getting very cold in the winter (Miller and Hyslop 1983).

At times, offshore winds from the east influence the climate. Between September and March, high pressure systems over the Great Basin, combined with a low pressure system to the southwest, creates warm, dry offshore winds that periodically circulate through the region. Known as Santa Ana winds, these winds have a significant impact on the local climate. After the long dry summers, the Santa Ana winds contribute to the fire regime which begins in the summer and continues until the wet winter ensues (Miller and Hyslop 1983).

Microclimates

Although the Los Angeles region is known for its year-round mild climate, there are many different microclimates in the valleys, mountains, hills, and coastal areas of the study area. Average rainfall and temperature varies significantly throughout the study area based on local microclimates. Microclimates are influenced by a variety of factors including topography, elevation, and distance from the ocean. For example, the average annual precipitation is 13 - 20 inches for Thousand Oaks, Simi Valley, and Los Angeles; 24 inches for Topanga Canyon in the Santa Monica Mountains; and 34 inches per year on average for Mount Wilson in the San Gabriel Mountains.



The Mediterranean-type climate and associated ecosystems that characterize southern California are found in only four other areas in the world. Photo: NPS.

Santa Monica Mountains National Recreation Area: Fundamental and Other Important Resources and Values

As described in *Chapter 1: Introduction*, each unit of the national park system will have a foundational document to provide basic guidance for planning and management decisions—a foundation for planning and management. Fundamental resources and values and other important resources and values are core components of the foundation document and help national park units make decisions about caring for those resources and values that relate to the park unit's national significance.

Fundamental resources and values are defined as those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management processes because they are essential to achieving the purpose of the park and maintaining its significance. Other important resources and values other resources and values are those that are not fundamental to the purpose of the park unit and may be unrelated to its significance, but are important to consider in planning processes. Fundamental and other important resources and values of the Santa Monica Mountains are also reflected in resources beyond the national recreation area.

The following fundamental resources and values have been identified for Santa Monica Mountains National Recreation Area:

- *Fully Functioning Native Habitats with High Native Diversity* – Preserving the full range of native habitats ensures long-term preservation of the high biodiversity associated with the Mediterranean ecosystem.
- *Science-Informed Stewardship / Learning Laboratory* – Science guides park management, informs policy, and lays the groundwork for educating visitors and fostering stewardship. A wide range of resources at the wildland-urban interface in close proximity to research institutions and residents creates a learning laboratory for understanding the evolution of the landscape and its diverse ecosystems.
- *Habitat Connectivity* – Maintaining habitat connectivity both within and outside of the national recreation area is critical and essential for preserving native biodiversity and ecosystem function (e.g., maintaining genetic diversity, dispersal, and movement).
- *Access to Year-Round Recreation and Exploration Opportunities* – With a mild, Mediterranean type climate, the Santa Monica Mountains provide a wide variety of year-round, close to home, outdoor recreation activities. Beaches, scenic routes, and an extensive trail network provide avenues for escape and exploration.
- *Coastal and Mountain Landscapes* – Shaped by ongoing geologic forces, the Santa Monica Mountains' coastal and mountain scenery includes canyons, ridgelines, rocky outcrops, and 21 miles of seashore that provide the setting for visitors and residents to enjoy outdoor recreation.
- *Native American Archeology* – Santa Monica Mountains National Recreation Area contains more than 10,000 years of Native American history, as represented by hundreds of archeological sites such as large villages, gathering areas, and rock art. These sites, along with other evidence, are used to reconstruct ancient subsistence and settlement patterns throughout the Santa Monica Mountains and Simi Hills.
- *Filming Sites and Settings* – Filming sites and settings include movie ranches that served as an outdoor backdrop for Hollywood's Golden Era of the movie industry, as represented by the Paramount Ranch Historic District. Filming continues today at Paramount Ranch and other locations within the park, and offers the public an opportunity to experience filmmaking.

The following other important resources and values have been identified for Santa Monica Mountains National Recreation Area:

- *Sites and Landscapes Representative of Southern California History* – The Santa Monica Mountains contain archeological resources, cultural landscapes, and historic sites and structures that depict important periods of southern California history including Spanish exploration, Mexican ranchos, western expansion and settlement, and modern urbanization. Themes include architecture, environmental engineering to capture and control water, the role of the automobile in shaping culture and the landscape, and amusement / entertainment. Examples of locations that illustrate these themes include Peter Strauss Ranch (amusement and discovery), King Gillette Ranch (gentlemen's ranch/architecture), Rancho Sierra Vista (working ranches), Mulholland Highway (role of the automobile), and Franklin Canyon (environmental engineering).
- *Ethnographic Resources* – Santa Monica Mountains contain a wide range of landscapes and resources important to American Indian cultures. Satwiwa Native American Culture Center serves as a destination for a broad range of American Indian groups from across the nation. Satwiwa is a learning center for all people to share traditional and contemporary indigenous lifeways. The center is a collective effort among the Chumash, Tongva, other native peoples, and the National Park Service.
- *Paleontological Resources* – Santa Monica Mountains National Recreation Area has one of the most extensive and diverse assemblages of marine and terrestrial fossil material known in the national park system. There are at least 2,300 known fossil localities, representing more than a dozen fossiliferous geologic formations ranging from the late Jurassic Period to the Pleistocene Epoch.



One of the fundamental resources and values of the Santa Monica Mountains National Recreation Area is habitat connectivity, critical for preserving biodiversity and ecosystem function. This iconic image of a mountain lion NPS researchers have labelled P-22 gained national attention for traversing two freeways to reach Griffith Park. Photo: Steve Winter/National Geographic.

With most of the air moisture flowing inland from the ocean, mountains facing the coast receive more precipitation as this air rises and cools. This pattern creates a rain shadow effect on inland facing slopes, which receive less precipitation as a result. As elevation increases, precipitation increases and temperatures decrease. Above 4,000 feet, the environment is characterized by distinct seasonal differences in temperature and features the highest precipitation in the region, including winter snow.

Microclimates in the study area's valleys experience effects from temperature inversion layers. In most areas, the air temperature becomes cooler at higher elevations. In the study area's valleys, the opposite is typical. Cool air flows down into the valleys from the mountains as cool marine air also flows inland. This air becomes trapped through the combination of the valleys' surrounding mountains and onshore air flows. With the cold air trapped in the valleys, warmer air suddenly rises, creating an inverse temperature gradient. The inversion layer also contributes to photochemical smog in the valleys which is a combination of air moisture and pollutants (Schoenherr 1992). Within the study area, there are six defined microclimates (Nelson 1983).

Topography and Geology

Transverse Ranges Geomorphic Province

The study area is defined by general topographic features including a series of mountains, hills and valleys. Collectively, the mountains and hills are part of the broader Transverse Ranges Geomorphic Province which includes geologic structures along the southern California coastline that lie east-west or "transverse to" the prevailing northwest-trending character of the west coast. These east-west trending mountain ranges are interspersed with alluvium-filled basins that include the valleys of the Rim of the Valley Corridor study area. The primary mountains within the Transverse Ranges Province include

Although there are other east-west trending ranges in the continental United States, the geologic story of the Transverse Ranges is unique at this large scale in the United States.

the Santa Ynez Mountains (and Topatopa Mountains to the east), Santa Susana Mountains, Santa Monica Mountains (and northern Channel Islands to the west), San Gabriel Mountains, and San Bernardino Mountains (Norris & Webb 1990). Additionally, the Simi Hills, Conejo Mountain/Las Posas Hills (and nearby unnamed volcanic hills), Sierra Pelona, and Verdugo Mountains (including the San Rafael Hills) are all part of the Transverse Ranges Province. Five of the mountain ranges that comprise the Transverse Ranges Geomorphic Province are represented in the study area: the Santa Monica Mountains, Santa Susana Mountains, Simi Hills, Verdugo Mountains and San Gabriel Mountains. The populated urban valleys (Conejo, Simi, La Crescenta, and San Fernando) are not part of the study area and are shown as "holes in the donut" on the study area maps in this report (*Figure 2-1: Topography*).

The anomalous orientation of the Transverse Ranges resulted from the clock-wise rotation of a previously north-south trending block that was caught up in movement between the Pacific plate and the North American plate about 18 million years ago. As the block rotated beginning about 17 million years ago, the crust was stretched and thinned causing volcanic eruptions in the Santa Monica Mountains and Conejo Mountain area. Relative plate motions changed about 6 million years ago when Baja California broke off of the North American plate. Baja California became attached to the Pacific plate, moved to the northwest and pressed against the Transverse Ranges block. This compressive force uplifted the blocks that became mountains and forced the blocks that became basins downward (subsidence). This compression continues today and is pushing the mountain ranges higher while the basins are pressed lower (Fritsche et al. 2001).

Although there are other east-west trending ranges in the continental United States (e.g. the Uinta Mountains in Utah, the Ouashita Range in Arkansas), the geologic story of the Transverse Ranges is unique at this large scale in the United States. In Alaska, there are several east-west trending mountain ranges but they are covered with snow and ice for most of the year. The ranges in Alaska are the result of terranes that were transported north on the Pacific Plate and accreted to the North American Plate. In contrast, the Transverse Ranges are the result of a ninety degree rotation caused by the land block getting stuck under the North American Plate and pushed clockwise by the Pacific Plate. In addition, the geological formations of the Transverse Ranges are far more accessible to both scientists and visitors.

Scientists have analyzed rocks in the Santa Monica Mountains and from the Conejo Volcanic complex within the study area to piece together the current model of the Transverse Ranges rotation. In his 2001 publication, "Transverse/Peninsular Ranges Connection – Nine Lines of Evidence for the Incredible Miocene Rotation," geologist Eugene Fritsche summarized the scientific findings that provide evidence and support for the rotation theory. Seven of the nine lines of evidence cited in Fritsche's paper are based on discoveries made within the study area (Santa Monica Mountains and the Conejo Mountain area).

Santa Monica Mountains

The Santa Monica Mountains are the westernmost mountain range in the study area. This transverse range spans much of southeastern Ventura County and southwestern Los Angeles County. Characterized by a series of deeply incised north-south trending canyons that drain to the Pacific Ocean, the Santa Monica Mountains are approximately 46 miles long and 7.5 miles wide. The mean elevation is approximately 1,000 feet. The highest point is Sandstone Peak with an elevation of 3,111 feet (NPS 2002).

The spiny backbone of the Santa Monica Mountains skirts the northern edges of the Los Angeles basin and Santa Monica Bay before descending into the sea at Point Mugu. The northern Channel Islands are the western extension of the Santa Monica Mountains. Folded and faulted structures characterize the Santa Monica Mountains, with five geologic stages having profoundly marked their more than 150-million-year history: (1) subduction; (2) rifting, rotation, and extension; (3) volcanic eruption; (4) compression and uplift; and (5) erosion.

The exposed rocks in the Santa Monica Mountains are sandstone, siltstone, mudstone, and volcanic rocks ranging in age from the Jurassic to Quaternary. The Santa Monica Slate is the oldest rock unit exposed in SMMNRA;

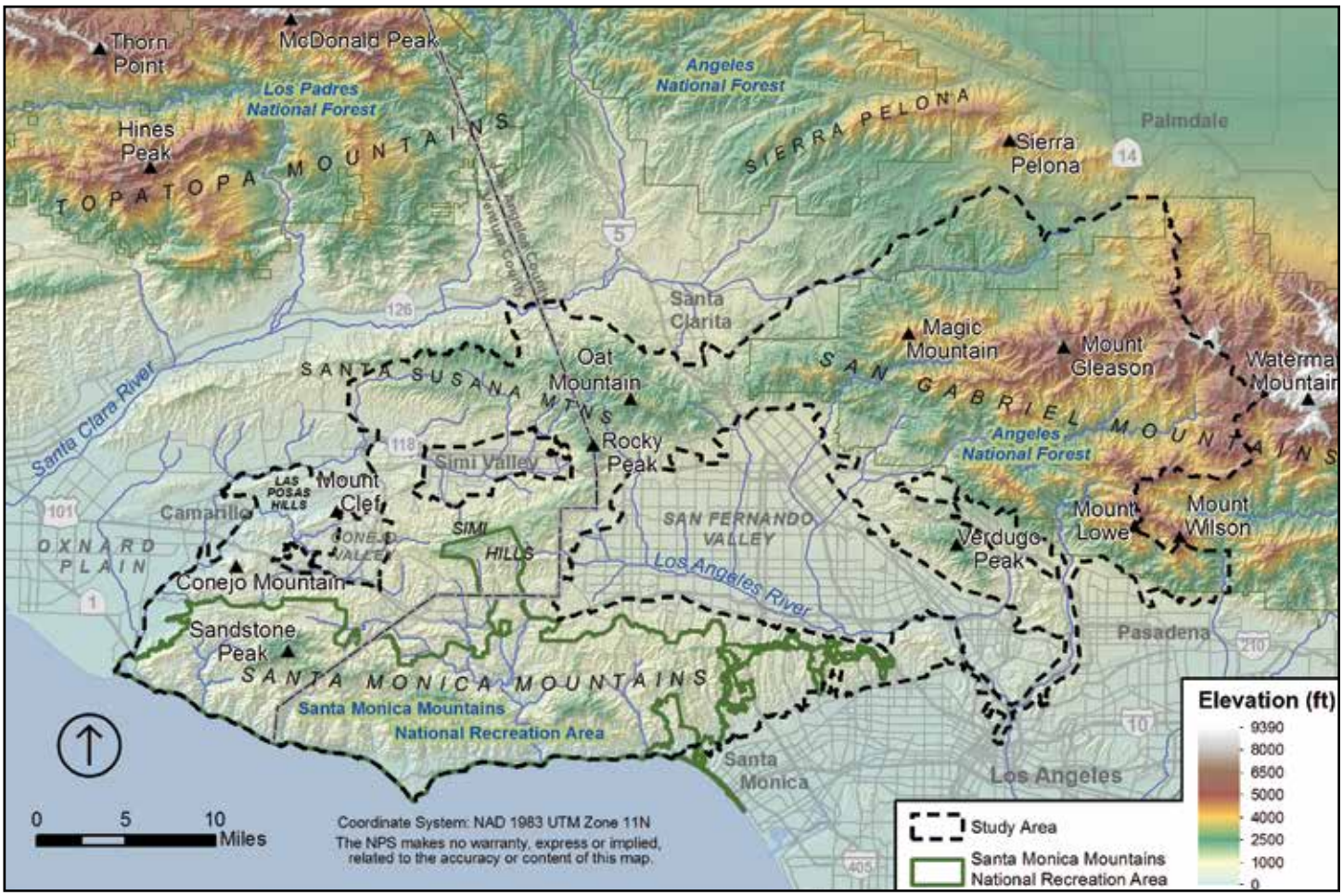


Figure 2-1: Topography

this rock unit was deposited as mud and other sediment on the ocean floor during the Late Jurassic Period (164–145 million years ago). The slate is overlain by an extensive sequence of Cretaceous and Cenozoic sedimentary and volcanic rocks, many of which have their type section (exposure for which a formation is named and described) in the Santa Monica Mountains. The Late Eocene–Early Miocene Sespe and Topanga Canyon formations (lower part of the Topanga Group) represent coastal alluvial deposits (Sespe) with equivalent nearshore marine deposits (Topanga Canyon). The Miocene (20–10 million years ago) Topanga Canyon formation is the most extensive geologic unit in the Santa Monica Mountains. This sequence of rocks consists of non-marine and marine deltaic sandstone and conglomerate in the eastern Santa Monica Mountains and marine shelf and submarine deposits in the western Santa Monica Mountains. Another widespread formation is the Conejo Volcanic complex (middle part of the Topanga Group), produced when hot molten rock escaped to the surface during the stretching of Earth's crust in the Santa Monica Mountains area 17 to 16 million years ago. The middle Miocene Calabasas formation is a marine sandstone and siltstone that overlies and interfingers with the Conejo Volcanics. The upper Miocene Modelo formation, representing a deep submarine fan complex, crops out in a belt along the northern Santa Monica Mountains stratigraphically above the Topanga Canyon formation, the Conejo Volcanic complex, and the Calabasas formation. Frequent landslides and occasional earthquakes serve as reminders that the rocks and landforms of the Santa Monica Mountains have not stopped moving or forming. In addition, floods, waves, and wind continue to work the landscape, resulting in the diverse landforms that characterize the recreation area. The Santa Monica Mountains include deeply carved canyons and gorges, streams, waterfalls, beaches, and rugged terrain. Malibu Creek bisects the mountains as it flows through Malibu Canyon to the Pacific Ocean. This antecedent creek originates in the Simi Hills and carves out gorges along its path to the ocean. Along the Pacific shoreline are steep cliffs and high bluffs that have eroded due to incessant wave action (NPS 2008).

Frequent landslides and occasional earthquakes serve as reminders that the rocks and landforms of the Santa Monica Mountains have not stopped moving or forming.

Rock Formations in the Santa Monica Mountains

From oldest to youngest, the rock formations in the Santa Monica Mountains include the Santa Monica Slate, Trabuco, Tuna Canyon, Simi Conglomerate, Santa Susana, Llajas, Sespe, Topanga Group which includes Topanga Canyon (Lower Topanga in Dibblee), Conejo Volcanic complex, and Calabasas formations (Upper Topanga in Dibblee), Modelo (Monterey in Dibblee), Saugus and surficial terrace deposits (Fritsche 2012). The following descriptions of rock formations in the Santa Monica Moutains are primarily based on an internal National Park Service technical report from 2012 "Paleontological resource inventory and monitoring: Mediterranean Coast Network" by Tweet, Santucci, and Connors (*Figure 2-2: Geology*).

Santa Monica Slate (Late Jurassic)

The Santa Monica Slate is the oldest rock unit found in the Santa Monica Mountains. It is a metamorphosed dark-gray and bluish-gray-to-black slate with local schist zones exposed in the eastern mountains at Encino Reservoir, Mission Canyon and in Topanga State Park and east of Interstate 405 around Cahuenga Peak in Griffith Park.

Trabuco Formation (Late Cretaceous)

The thin Trabuco formation consists primarily of conglomerates from an alluvial fan.

Tuna Canyon Formation (Late Cretaceous)

The Tuna Canyon formation is a marine sedimentary unit that was deposited during a marine transgression, a time when the ocean encroached and covered land areas. It is found in the eastern Santa Monica Mountains.

Simi Conglomerate (Paleocene)

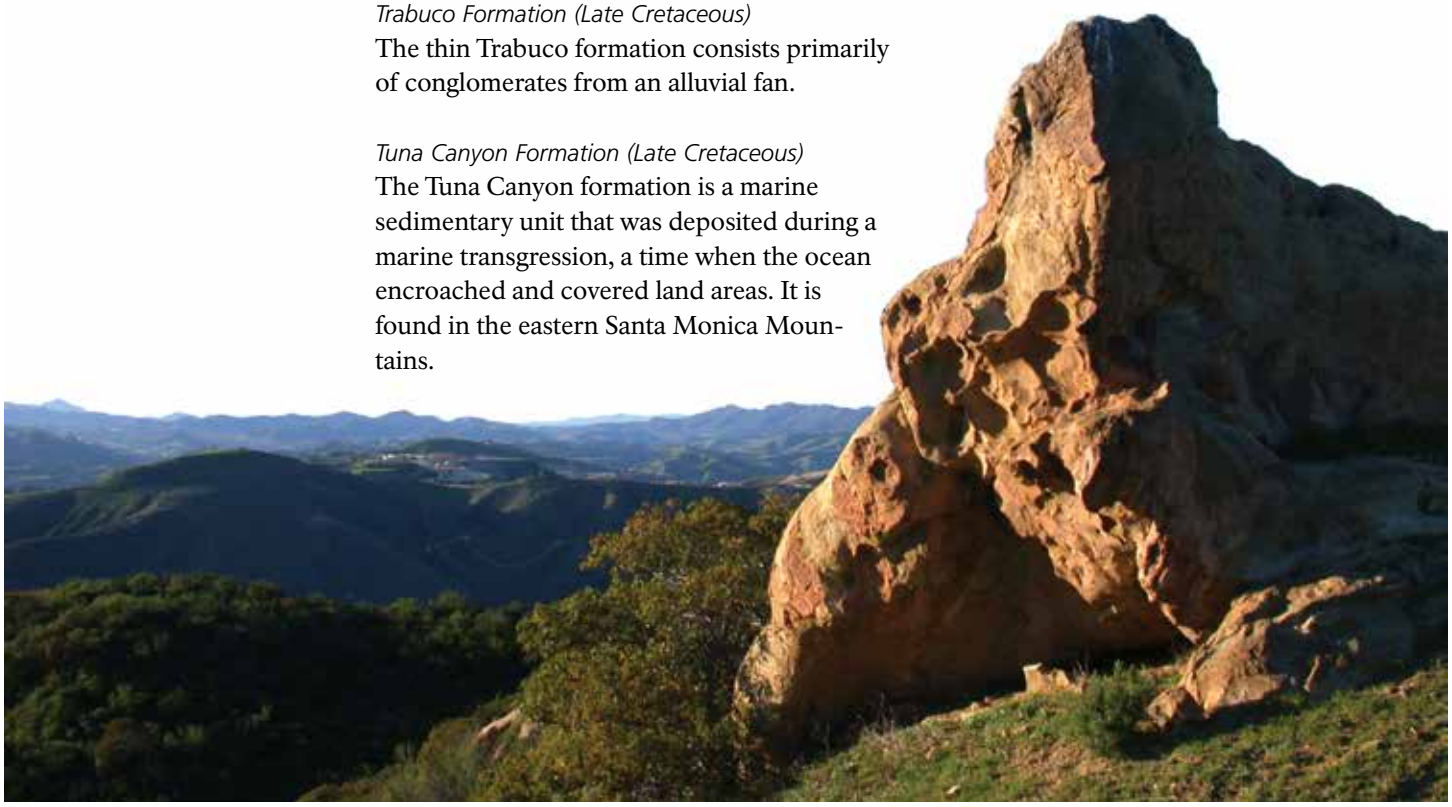
The Simi Conglomerate is best known from the Simi Hills, but is also present in the Santa Monica Mountains. It is a cobble and boulder conglomerate with some sandstone exposed from Solstice Canyon to Runyan Canyon. It includes both marine and nonmarine deposits.

Santa Susana Formation (Late Paleocene - Early Eocene) (also known as Coal Canyon or Martinez)

This formation includes a marine sequence of sandstone, pebble conglomerate, and siltsone. It includes white algal limestone beds, shales with intercalated sandstones, some massive beds of poorly sorted arkosic sandstone and conglomerate. It is found in the southern Santa Monica Mountains.

Llajas Formation (Middle-Late Eocene)

This unit contains gray claystones and siltstones that are exposed in Malibu Creek State Park and Trancas Canyon. The formation is best known in the Simi Hills and the Santa Susana Mountains north of Simi Valley where its namesake Las Llajas Creek and the fossil-rich "Stewart beds" have yielded many new species (Squires 1983b). Deposition of the Llajas formation occurred during a marine transgression and part of the following regression (a



The mountains in the study area are part of the Transverse Ranges Geomorphic Province which unlike most other mountain ranges, extend "transverse to" the prevailing northwest-trending character of the west coast. Photo: NPS.

Geology

Rim of the Valley Corridor Special Resource Study

National Park Service
U.S. Department of the Interior

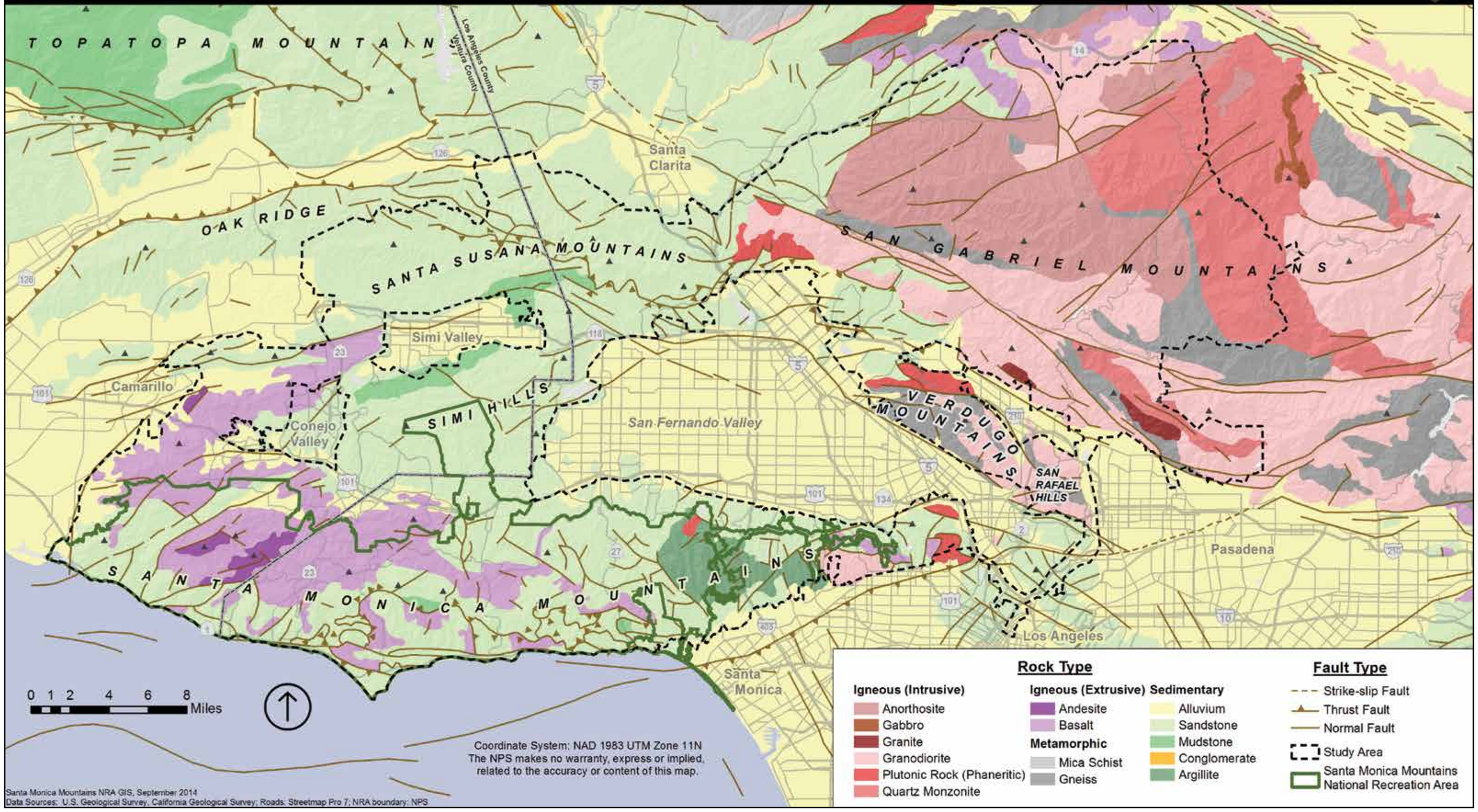


Figure 2-2: Geology



The Santa Monica Mountains, Simi Hills, Santa Susana Mountains, Verdugo Hills and San Gabriel Mountains represent the Transverse Range geomorphic province in the study area. Geologist Gene Fritsche explains connections between visible features and a geologic map. Photo: NPS.

marine retreat), leading depositional settings to change from nonmarine coastal alluvial fans, to shallow marine, to offshore, and back to shallow marine. The water was tropical (at least 68 degrees F).

Sespe Formation (Middle Eocene - Early Miocene)
The Sespe formation is well known from the Santa Monica Mountains and Simi Valley for its nonmarine redbed sequences of sandstone and claystone. It is part of a complex series of intertonguing terrestrial, nearshore shallow marine, and offshore deep marine formations. The Sespe formation was deposited during a time of low sea level when ice was developing in Antarctica and the Transverse Ranges block was uplifted while being transported northward on the Pacific Plate. Local sea level may have been more than 600 feet lower than present. The depositional setting included braided and meandering rivers, floodplain overbanks, salt marshes, and coastal environments. Braided rivers are prominent low in the formation, and are replaced by meandering rivers and finally coastal settings. A savanna with a gallery forest is now thought to have been present, with a seasonal climate.

Topanga Group (Late Oligocene – Middle Miocene)
This group consists of three formations: Topanga Canyon formation (lower), Conejo Volcanic complex (middle), and Calabasas formation (upper).

Topanga Canyon Formation (Late Oligocene - Early Miocene) (aka Lower Topanga Formation)
The Topanga Canyon formation is the most widely exposed geologic unit within the Santa Monica Mountains. The formation is sometimes split into three members: 1) the nearshore shallow water marine Saddle Peak Member, 2) the terrestrial Fernwood Member, and 3) the nearshore shallow-water Cold Creek Member.

Conejo Volcanic Complex (Early Miocene)
The Conejo Volcanic complex is widely exposed in the Santa Monica Mountains, particularly in the western half of the range. The lower rocks of this volcanic formation are submarine as evidenced by pillow lavas, but the middle and upper portions erupted above sea level. The elevation of the volcano may have been greater than 4,300 feet and there is evidence that a low montane subtropical forest grew in this volcanic highland. Eruptions occurred from about 17 million years ago to about 16 million years ago. Basalt is the most common extrusive igneous rock; basaltic andesite and volcanic mudflows (lahars) are also common. Other volcanic rocks of the same age include diabase and dacite.

Calabasas Formation (Middle Miocene) (aka Upper Topanga Formation)
The Calabasas formation, named for Calabasas Peak, consists chiefly of marine sandstone (medium- to thick-bedded medium- to coarse-grained wackes, commonly showing graded bedding) and inter-bedded silty shale (locally diatomaceous or phosphatic), with zones of large dolomitic concretions. This formation is exposed in the central and eastern Santa Monica Mountains, and also occurs in the Simi Hills and in the Santa Susana Mountains south of Big Mountain.

Modelo Formation (Middle - Late Miocene) (aka Monterey Formation)
The Modelo formation is a marine formation built by deposits from turbidity currents on submarine fans and settling sediments. It includes massive units of coarse gray and brown sandstones, calcareous and siliceous shales, and soft white diatomaceous shale. This formation can be found in the eastern Santa Monica Mountains.

Saugus Formation (Pleistocene)
Although the Saugus formation is better known from the hills and mountains of the former Ventura basin such as the Simi Hills and Santa Susana Mountains, a small area in the Santa Monica Mountains has been mapped as Saugus. This formation is divided into a shallow marine lower portion and a nonmarine upper portion.

Simi Hills and Santa Susana Mountains
The Simi Hills run east-west and extend approximately 26 miles with an average width of 7 miles. The Simi Hills separate the Conejo Valley (west), Simi Valley (east) and San Fernando Valley (north). These are lower elevation hills with a mean elevation of 1,500 feet. Simi Peak (2,403 feet) is the highest point in the Simi Hills. The Simi Hills also serve as an important ecological connection between the Santa Monica Mountains and the Santa Susana Mountains to the north.

The Santa Susana Mountains form the northwestern portion of the study area. The western extent of the Santa Susana Mountains, known as the South Mountain-Oak Ridge complex, terminates in the Oxnard Plain in Ventura County and is not included within the study area. The eastern edge of the Santa Susana Mountains is defined by Newhall Pass (aka San Fernando Pass), in Los Angeles County, which separates the range from the San Gabriel Mountains to the east. The Santa Susana Mountains divide the Santa Clara River Valley and the Santa Clarita Valley to the north, from the Simi Valley and San Fernando Valley to the south. The eastern Santa Susana Mountains (east of California State Route 23) are approximately 21 miles in length and average 6 miles in width. The mean elevation is approximately 2,000 feet. The highest point of the Santa Susana Mountains is Oat Mountain with an elevation of 3,747 feet.

Geologically, the Simi Hills and Santa Susana Mountains share many similarities. Both ranges are sedimentary in origin, uplifted from the Ventura basin. The stratigraphy of the ranges is similar, though the Santa Susana Mountains uplifted more recently, within the last million years. The Simi Hills date from the late Cretaceous (Chatsworth formation) to the present (surficial deposits). Rocks in the Santa Susana Mountains are primarily late Paleocene to the present in age, though there are some exposures of the much older Chatsworth formation in the vicinity of Rocky Peak where the Santa Susana Mountains meet the Simi Hills. The formations vary from deep to shallow marine, to terrestrial stream deposits or alluvium, due to changes in ocean levels and the location of the coast over time (*Figure 2-2: Geology*).

The stratigraphy in the Simi Hills and the Santa Susana Mountains generally includes the following formations from oldest to youngest: Chatsworth, Simi Conglomerate, Las Virgenes Sandstone, Santa Susana, Llajas, Sespe, Topanga Canyon, Conejo Volcanic complex, Calabasas, Modelo, Towsley, Pico, Saugus, and surficial terrace deposits. The following descriptions include the formations not already described in the "Rock Formations of the Santa Monica Mountains" section above.

Rock Formations in the Simi Hills and Santa Susana Mountains

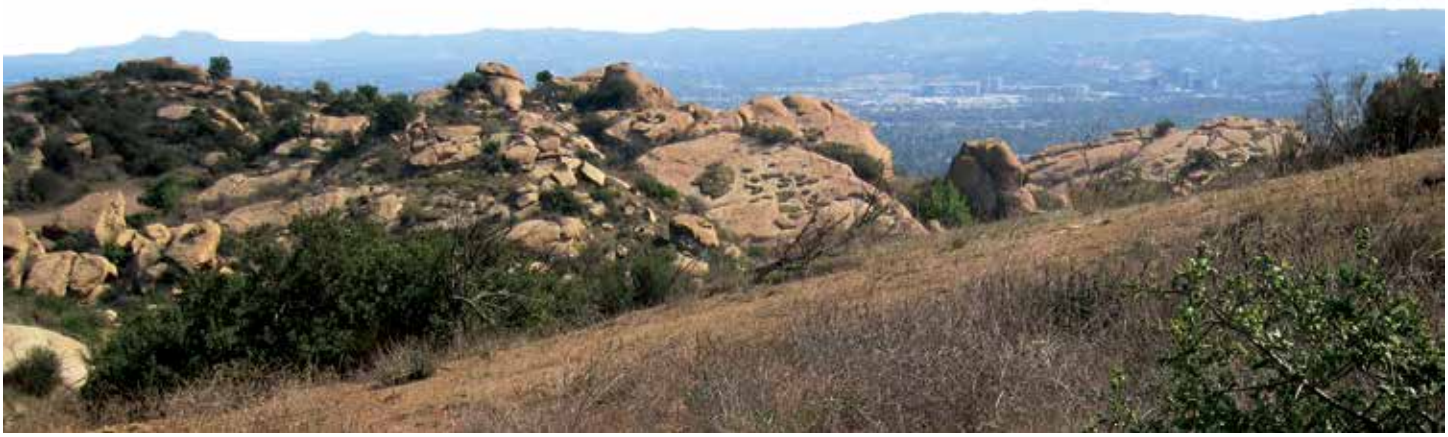
The following descriptions of rock formations are primarily based on an internal National Park Service technical report from 2012 "Paleontological resource inventory and monitoring: Mediterranean Coast Network" by Tweet, Santucci, and Connors.

Chatsworth Formation (Late Cretaceous)

The colorful boulders of the Chatsworth formation, a deep marine sandstone, provide spectacular scenery in the vicinity of Santa Susana Pass between Chatsworth and Simi Valley. The Chatsworth formation is mostly composed of sandstone and mudstone beds formed by submarine fan deposits.

Las Virgenes Sandstone (Early Eocene – Late Paleocene)

The Las Virgenes Sandstone is part of the Lower Cenozoic section of the Simi Hills although it has also been reported from Solstice Canyon in the Santa Monica Mountains. It is found west of the Runkle Canyon – Burro Flats Fault zone. The formation is up to 640 feet thick and is composed of sandstone, mudstone, and carbonaceous silty sandstone. This sandstone was part of a marine transgression



The Simi HIlls and Santa Susana Mountains include colorful outcrops. Photo: NPS.

and deposition occurred in both marine and nonmarine settings. The formation changes from sandy fluvial deposition in the west to nearshore deposition to the east.

Towsley Formation (Late Miocene - Early Pliocene)
The Towsley formation consists of interbedded marine siltstone, mudstone and conglomerate.

Pico Formation (Late Pliocene - Early Pleistocene) (aka Fernando or Repetto Formations)
The Pico formation is named for Pico Canyon on the north side of the Santa Susana Mountains. It is made of shallow marine sediments, soft claystone, siltstone, and commonly fossiliferous sandstones. This oil-producing formation is intensely deformed and faulted.

Conejo Mountain/ Las Posas Hills
The Conejo Mountain area is not an official geographic term, but for the purposes of this study, this term is used to describe the upland hills located outside of the SMMNRA boundary to the northeast of the campus of California State University at Channel Islands, including the steep hillsides of the Conejo Grade along Highway 101, the volcanic ridges of Wildwood Park and Mount Clef Ridge near California Lutheran University in Thousand Oaks and the hills near the Ronald W. Reagan Presidential Library & Museum in Simi Valley. The highest point in this area is Conejo Mountain (elevation 1,814 feet). The Las Posas Hills are located north of the city of Camarillo on the north side of the Santa Rosa Valley. The highest point in these hills is Las Posas West (1,053 feet).

Molten rock erupted from beneath the sea near what is now Newbury Park when the rotation of the Transverse Ranges began 17 million years ago. The lava flows created short-lived islands in the area that were eroded away once volcanic action and rotation ceased. This volcanic sequence in the western Santa Monica Mountains is known as the Conejo Volcanic complex and is described above in the section on "Rock Formations of the Santa Monica Mountains."

Rock Formations in Conejo Mountain/Las Posas Hills

The Sespe formation, Conejo Volcanic complex, and the Calabasas formation occur as small exposures along the Simi-Santa Rosa Fault zone that runs east-west between the Conejo Mountain area and the Las Posas Hills (*Figure 2-2: Geology*).

The Conejo Mountain area south of the Santa Rosa Valley is primarily composed of rocks from the Conejo Volcanic complex. The Las Posas Hills to the north are almost entirely composed of rocks from the Saugus formation. Both formations are described above in "Rock Formations of the Santa Monica Mountains."

Verdugo Mountains/ San Rafael Hills
The Verdugo Mountains, located at the eastern edge of the San Fernando Valley, are a northwest-southeast trending, lens-shaped series of ridges approximately nine miles long and varying from three to four miles in width. The mountains are separated on the north and northeast from the main body of the San Gabriel Mountains by extensive alluvial fans of the Sunland-Tujunga and La Crescenta areas. Bordering the Verdugo Mountains on the north is Big Tujunga Wash. To the south, the Verdugo Wash separates the Verdugo Mountains from the San Rafael Hills. The highest point in the Verndugo Mountains is Mount Verdugo (3,126 feet) (City of Glendale 1993).

This primary ridgeline separates the San Fernando Valley from the La Crescenta Valley. The Verdugo Mountains are characterized by steep terrain, sharp ridgelines, and deep v-shaped canyons that contain ephemeral drainages and vegetation dominated by native species (City of Burbank 2012).

The San Rafael Hills are located east of the Verdugo Mountains and are bordered on the west by Verdugo Canyon and on the east by the Arroyo Seco. The San Rafael Hills are approximately three and one-half miles wide and are nearly four and one-half miles long on their north-south axis. These hills are dissected by two distinct canyon areas, Scholl and Sycamore canyons. Flint Peak rises to 1,887 feet,and is the highest elevation in the San Rafael Hills.

The Verdugo Mountains and San Rafael Hills are separated from the San Gabriel Mountains by a sunken block that has filled with alluvium (La Crescenta Valley). The geology of the Verdugo Mountains is similar to that of the San Gabriel Mountains (*Figure 2-2: Geology*).

The region is experiencing active mountain building and the San Gabriel Mountains are some of the fastest growing mountains in the world, rising an average of two inches a year (Murphy 1985).

The Verdugo Mountains are composed of metamorphic and igneous basement rocks of Precambrian to Early Cretaceous age. A thin soil mantle that varies in depth throughout the mountains generally overlies these basement rocks (Burbank 2012).

San Gabriel Mountains

The San Gabriel Mountains are approximately 50 miles long and 15 miles wide. The western portion of the mountain range is within the study area. The San Gabriel Mountains contain some of the steepest and most rugged terrain of all the mountains in the Transverse Ranges. The highest peak, located east of the study area, is Mount San Antonio. Also known as "Mt. Baldy" or "Old Baldy," this peak reaches a height of 10,064 feet. Mountains on the western end of the range are generally lower in elevation, around 4,000 to 6,000 feet above sea level. The highest peak in the western San Gabriel Mountains is Mount Gleason, elevation 6,520 feet.

The San Gabriel Mountains are a high, rugged geologic block located between the Los Angeles basin and the Mojave Desert. The Sierra Madre Fault zone forms the range's southern boundary. The northeastern boundary is the San Andreas Fault zone, which crosses through Cajon Pass and separates the higher San Bernardino Mountains. The San Gabriel Mountains face the Soledad basin on the northwest and the San Fernando Valley on the west, and the San Gabriel Valley to the south.

The San Gabriel Mountains rise quickly from the foothills, with slopes as steep as 65-70%. This can be attributed to the fact that the San Gabriel Mountains are a young mountain range. The region is experiencing active mountain building and the San Gabriel Mountains are some of the fastest growing mountains in the world, rising an average of two inches a year (Murphy 1985).

The geologic history of the San Gabriel Mountains and the Los Angeles basin involves vertical and lateral movements of great magnitude. The San Gabriel Mountains are a remarkable range that provides a window deep into the ancient crust of the earth and a key for understanding the evolution of the San Andreas Fault in southern California. The diverse assemblage of rocks in the San Gabriel Mountains includes some of the oldest rocks in California.

Rock Formations of the San Gabriel Mountains

Rock formations in the San Gabriel Mountains are quite diverse in age and composition (*Figure 2-2: Geology*). The formations range from Precambrian igneous and metamorphic rocks to recent alluvium deposited by streams and rivers. Bedrock units in the San Gabriel Mountains are composed primarily of crystalline basement rocks that range in age from the Precambrian to Mesozoic eras. Cenozoic beds, including the fossiliferous and terrestrial Mint and Tick formations, are located only along the range's western and northern margins (see descriptions below under "Rock Formations in the Soledad Basin/Upper Santa Clara River").

Basement rocks exposed in the western San Gabriel Mountains, the upper-plate rocks of



The Conejo Mountain/Las Posas Hills area (foreground) are adjacent to the Santa Monica Mountains (background). From this area are views of the Pacific Ocean and Channel Islands National Park (right, background). Photo: NPS.

the Vincent thrust, include Mendenhall gneiss, augen gneiss, and the anorthosite-syenite-gabbro complex. Augen gneiss in the western San Gabriel Mountains has been dated as the oldest rocks in the Transverse Ranges (1.7 billion years). Triassic granitic rocks associated with the Mount Lowe plutonic suite are also exposed here (Dibblee 1982; Norris and Webb 1990). The anorthosite complex includes an anorthosite pluton, syenite and mafic rocks of a Proterozoic age. This type of complex is rare, particularly in a relatively young geological landscape (Dibblee 1982).

In the southwest corner of the mountains, the Tujunga Terrane, named for rocks exposed in lower Tujunga Canyon, contains basement rocks such as gneisses, late quartz diorite, and granodiorite-quartz, as well as metasedimentary rocks associated with the pre-Triassic Placerita formation.

Upper Santa Clara River (Soledad Basin)
The Soledad basin lies at the northwestern base of the San Gabriel Mountains. On the north, it is defined by the Sierra Pelona. The San Andreas Fault and the San Gabriel Fault bound the basin on its northeast and southwest borders. The Upper Santa Clara River and its headwaters drain from both the San Gabriel Mountains and the Sierra Pelona into the Soledad basin and Santa Clarita Valley.

A large syncline forms the structure that is known as the Ventura basin in the west and the Soledad basin in the east. This structure is about 120 miles long and includes the Santa Barbara Channel between the Channel Islands and the Santa Ynez Mountains as well as the uplifted Simi Hills and the Santa Susana Mountains. The Ventura basin is famous for its remarkably thick section of mostly marine sedimentary rocks, which totals more than 58,000 feet thick (Norris and Webb 1990). The Soledad basin east of the San Gabriel Fault contains mainly middle and late Cenozoic nonmarine sedimentary rocks that rest on the crystalline basement of the San Gabriel Mountains to the south and the Sierra Pelona to the north. Geologic features of the Soledad basin include the prominent hogback ridges at Vasquez Rocks and the borax deposits at Tick Canyon. Except for the Santa Barbara Channel, the entire area was subjected to strong uplift, folding, and faulting during the middle Pleistocene. This produced today's topography and created the structures in which the region's prolific oil fields developed.

Rock Formations in Soledad Basin/Upper Santa Clara River
The Soledad basin contains various Cenozoic rock units (*Figure 2-2: Geology*). The marine Martinez formation of Paleocene age is the oldest sedimentary unit in the region.

Vasquez Formation (Oligocene)
The Martinez formation is overlaid by the Oligocene Vasquez formation of andesite volcanic rocks, non-marine red beds, sedimentary breccia, claystone, mudstone and limestone. The Vasquez formation is spectacularly displayed at Vasquez Rocks County Park just north of the study area (Weigand 1982).

Tick Canyon Formation (Miocene)
Overlaying the Vasquez formation is the Miocene Tick Canyon formation, which is composed of conglomerate sandstone and siltstone of fluvial origin (Oakeshott 1971).



The Verdugo Mountains (foreground) and the San Gabriel Mountains (background) border the La Crescenta Valley which is largely developed. Photo: NPS.

Mint Canyon Formation (Miocene)
The most widespread formation in the Soledad basin is the Mint Canyon formation. Its distinctive reddish beds of arkosic and conglomerate sandstone formed from silt deposits in an ancient Miocene lake. A considerable number of fossils have been identified in the Mint Canyon formation (see "Paleontological Resources" section below).

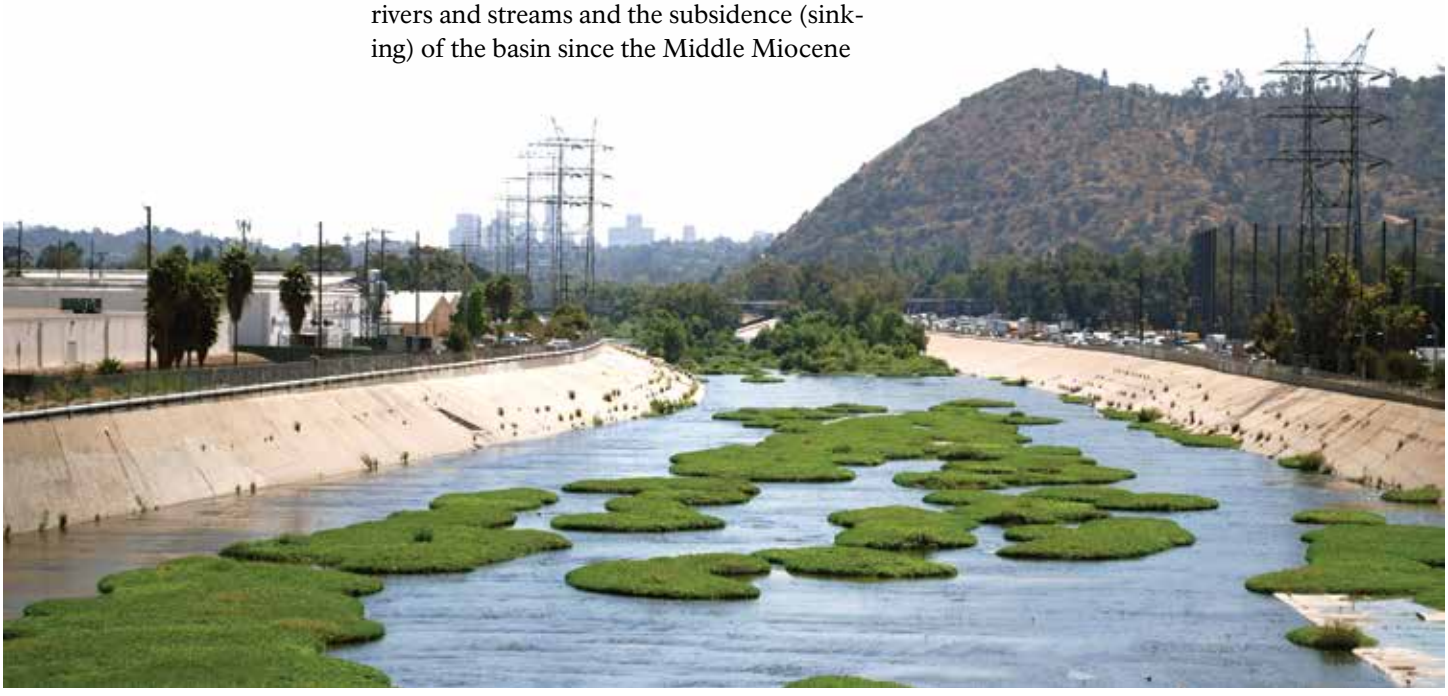
Other Formations
Younger Cenozoic formations in the Soledad basin include the Towsley formation (described above under "Rock Formations of the Simi Hills and Santa Susana Mountains") and the Saugus formation (described above under "Rock Formations of the Santa Monica Mountains").

Arroyo Seco and Los Angeles River Corridors (Los Angeles Basin)
The Arroyo Seco and Los Angeles River subgeographic areas are narrow river corridors that traverse the Los Angeles basin. The Los Angeles basin is a depositional basin and alluvial fan which lies at the northern extent of the Peninsular Ranges Geomorphic Province and the southernmost extent of the Transverse Ranges Geomorphic Province (Yerkes et al. 1965, Bilodeau et al. 2007).

Most of the Los Angeles basin area consists of alluvium, thousands of feet deep in some areas, compiled from years of deposits from rivers and streams and the subsidence (sinking) of the basin since the Middle Miocene (*Figure 2-2: Geology*). During this time ranges like the San Gabriel and Santa Monica Mountains were rapidly rising and eroding. The sedimentary deposits are believed to be more than 20,000 feet thick, highly fossiliferous, and oil-producing (Yerkes et al. 1965, Bilodeau et al. 2007).

The Arroyo Seco corridor below the San Gabriel Mountains extends to the Los Angeles River. The Arroyo Seco is characterized by alluvial fan deposits on its flanks and younger alluvium, colluvium, and man-made artificial fill in the river channel. Bedrock units include the Miocene-age Topanga formation consisting of sandstone and conglomerate, and an igneous body of quartz diorite (USACOE and Los Angeles County Department of Public Works 2011).

The Los Angeles River corridor within the study area, and extending west into the San Fernando Valley, contains layers of alluvium and colluvium primarily derived from Miocene sedimentary rock eroded from the Santa Monica and Santa Susana Mountains. Further east along the river corridor, alluvium and colluvium are derived from granitic and metamorphic terrain. Similar to the Arroyo Seco, within the river channel itself are areas of man-made artificial fill as a result of flood protection engineering (USACOE 2013).



The Los Angeles River flows through valleys characterized by alluvium and colluvium eroded from the surrounding mountains. Photo: William Preston Bowling.

As one of the few places on Earth where a transform-fault plate-boundary occurs on land rather than beneath the sea, the San Andreas Fault system is one of the most studied structural features on the planet.

Tectonic Setting and Major Faults in the Study Area

Faults

A number of significant fault systems are located in or near the Rim of the Valley Corridor study area (*Figure 2-2: Geology*). The following section provides a short description of the study area's major faults.

Generally, the Rim of the Valley Corridor study area is defined on the south by the Santa Monica-Hollywood-Raymond-Sierra Madre Fault Zones. Geologically, this is where the Transverse Ranges Geomorphic Province meets the Peninsula Ranges Geomorphic Province. The Raymond Fault extends east from the Santa Monica Mountains to the Sierra Madre-Cucamonga Fault Zone near Arcadia. This fault produces a very obvious south-facing scarp along much of its length. Similarly, the Verdugo Fault marks the southwest facing scarp of the Verdugo Mountains.

The San Gabriel Mountains are bounded by fault systems including the San Andreas Fault system to the north and the Cucamonga-Sierra Madre Fault complex to the south and southwest. On the east the mountains are bounded by faults in the San Jacinto Fault Zone, an extension of the San Andreas Fault system. The San Gabriel Fault Zone cuts through the heart of the San Gabriel Mountains and extends northwest through the Sierra Pelona.

The Sierra Madre Fault Zone is a steep, north dipping, front-range fault along which most of the uplift of the San Gabriel Mountains has occurred. Activity on this fault is very recent (Norris and Webb 1990).

At the western end of the study area where the Santa Monica Mountains meet the Oxnard Plain lies the Bailey Fault. Other faults within the study area include the Oak Ridge Fault, the Simi-Santa Rosa Fault Zone, the Santa Susana Fault, the Chatsworth Fault, the Northridge Hills Fault, the Mission Hills Fault, the Verdugo Fault, the Vazquez Creek Fault, and the Soledad Basin Faults.

In addition to these mapped faults, the region contains blind thrust faults. Blind thrust faults are shallow-dipping reverse faults that lie entirely below the earth's surface. Although many of these faults remain unknown, two regional examples are the Puente Hills Blind Thrust, which runs underneath downtown Los Angeles and was the source of the 1987 Whittier Narrows earthquake, and the Northridge Thrust Fault, which ruptured in the 1994 Northridge earthquake. A summary of significant earthquakes is provided in *Table 2-1: Significant Earthquakes Within or Near the Study Area.*

San Andreas Fault System

The San Andreas Fault system formed along the translational boundary between the North American and Pacific Plates. As one of the few places on Earth where a transform-fault plate-boundary occurs on land rather than beneath the sea, the San Andreas Fault system is one of the most studied structural features on the planet. Convergent transform movements are responsible for the mountain building activities which continue to form the San Gabriel Mountains and other Transverse Ranges. Although the rate of movement varies over time, geologists believe that the Pacific Plate is currently moving northwest at a rate of almost 5 centimeters (1.96 inches) per year.

Throughout the year the San Andreas Fault experiences many small earthquakes as the Pacific Plate continues its journey north. Large earthquakes are also associated with this fault. Several miles north of the study area, the Fort Tejon earthquake of 1857 (7.9 magnitude) was one of the largest earthquakes experienced in southern California. An extensive rupture was accompanied by the greatest right-lateral offset yet observed on the San Andreas system, some 30 feet (Norris and Webb 1990).

The San Gabriel Fault is an older strand of the San Andreas Fault system. Credited with defining the general east-west trend of Transverse Range structure, the San Gabriel Fault strikes southeast from Frazier Mountain and enters the San Gabriel Mountains on the western end. It appears to be offset in the San Antonio Canyon by north-south trending San Antonio and Stoddard Canyon Faults, with the eastern segment terminating against the San Jacinto Fault. The San Gabriel Fault's wide crush zone has strongly affected topography and drainage. For example, the east and west forks of the San Gabriel River follow the fault for most of their lengths.

During the last 12 million years, the San Gabriel Fault is estimated to have undergone about 60 kilometers/40 miles of right slip movement which is thought to have ceased about 5 million years ago. The San Gabriel Fault has also experienced varying degrees of vertical displacement. Along the southwest side of the Ridge basin, vertical displacement is as much as 14,000 feet. The San Gabriel Fault has experienced only minor activity in recent times (Norris and Webb 1990).

San Fernando Fault Zone

The San Fernando Fault Zone is a zone of thrust faults in the northern San Fernando Valley. The San Fernando earthquake of 1971 (also known as the Sylmar earthquake, 6.6 magnitude) was one of the strongest earthquakes experienced in this area in modern times. The earthquake caused over $500 million in property damage and 65 deaths. Although this earthquake was set off by the San Fernando Fault Zone within the study area, seismologists have shown that the San Fernando earthquake defined a north-dipping reverse fault that corresponded to the surface breaks observed along segments of the Sierra Madre Fault zone. The San Fernando earthquake alone caused a three foot uplift of the San Gabriel Mountains (Norris and Webb 1990).

Oak Ridge Fault Zone

This fault dips to the south, at a fairly shallow angle. Thus, epicenters of earthquakes on this fault may appear far removed from the surface trace. The surface trace of the Oak Ridge thrust is roughly paralleled by both the Santa Clara River and California State Route 126 just north of the study area. At its eastern end, the Oak Ridge thrust appears to be overthrust by the Santa Susana Fault, thus becoming a blind thrust fault. Indeed, the fault associated with the 1994 Northridge earthquake is probably part of the Oak Ridge Fault system, since it shares many of the characteristics of this fault (Southern California Earthquake Data Center 2014, Jennings 1994).

Soledad Basin Faults

Numerous northeast-striking faults cut across the sedimentary and basement rocks of the Soledad basin including the Lone Tree and Soledad Faults (Wilson and Hernandez 2003). The Soledad fault runs through Soledad basin where it brings the crystalline basement rocks of the San Gabriel Mountains in contact with tertiary rocks to the west.

Landslides

Landslides form widespread and important physiographic elements in the highly fractured rocks of the Transverse Ranges. Activity along the San Andreas Fault zone has caused some of the largest landslides in California. Examples include Crystal Lake in the San Gabriel Mountains, Cow Canyon, Manker Flats and Coldwater Canyon. Some of the largest landslides in southern California (including Crystal Lake) are located in the Angeles National Forest (USFS 2005). Moderate to large landslides also occur in the Santa Monica Mountains, Santa Susana Mountains, and Simi Hills, predominantly in weak, folded and faulted tertiary sedimentary rocks. Large landslides are infrequent occurrences but demonstrate the potential hazards to development below unstable areas (California Department of Conservation 2013).

Erosion and Debris Flows

The highly erosive steep slopes of the San Gabriel Mountains produce considerable amounts of sand, mud, and aggregate. After fires clear steep slopes of vegetation, winter rains may cause these materials to move in debris flows which can be highly destructive to anything in their path.

Table 2-1: Significant Earthquakes Within or Near the Study Area (Magnitude > 6.5 or that caused loss of life or more than $200,000 in damage)

Date	Magnitude	Name, Location, or Region Affected	Loss of Life and Property
1857, Jan. 9	7.9	Great Fort Tejon earthquake	1 dead; damage from Monterey to San Bernardino County
1899, July 22	6.4	Wrightwood	Chimneys knocked down; landslides reported
1933, Mar. 11	6.4	Long Beach	115 dead; $40 million in property damage
1971, Feb. 9	6.6	San Fernando (aka Sylmar)	65 dead; more than 2,000 injured; $505 million in losses
1987, Oct. 1	6.0	Whittier Narrows	8 dead; $358 million in property damage to 10,500 homes and businesses
1994, Jan. 17	6.7	Northridge	57 dead; more than 9,000 injured; about $40 billion in property damage

Source: California Geological Survey 2004

In the 1920s, Los Angeles County was the world's fifth largest oil producer.

As described later in the *Water Resources, Flood Management* section of this chapter, Los Angeles County has constructed a series of debris basins along the foothills of the San Gabriel Mountains to protect foothill residents from debris flows.

Mineral Resources

The study area is rich in a variety of mineral resources including petroleum, gravel products, metals, and other commodities.

Petroleum Products

The study area overlies the Los Angeles and Ventura oil basins, geologic areas well known for their petroleum resources. The source of oil resources is primarily lower Pliocene and upper Miocene strata.

Native Americans used seeps of asphalt that oozed to the surface on the north side of the Santa Susana Mountains from Pico Canyon to Placerita Canyon. The oldest producing oil field in California is in Pico Canyon near Newhall. Oil was collected here as early as 1850 (Norris and Webb 1990). In the 1920s, Los Angeles County was the world's fifth largest oil producer. Presently, oil production is less prevalent than it was almost a century ago, although some oil and natural gas wells are still in production, primarily in the Santa Susana Mountains. While many older mines and oil wells have been abandoned, recent oil price increases have prompted drilling of new wells and reopening of some idle wells (California Department of Conservation 2009). In addition, natural gas is stored subsurface in gaps in the rock layers where oil was previously extracted. The 3,600 acre Aliso Canyon Storage Facility, north of Porter Ranch, is one of the largest of these storage facilities in the country.

Sand, Gravel, and Other Rock Products

The erosive San Gabriel Mountains provide a seemingly endless source of aggregate which is an ingredient for building roads and concrete structures. Sand, gravel, and other rock products are the most significant mineral resources, exclusive of petroleum, in the Transverse Ranges (Morton 1982; Dibblee 1982). Generally, aggregate mining sites are located in the Upper Santa Clara River including Canyon Country, Agua Dulce, Mint Canyon, and Soledad Canyon. Sand and gravel resources are primarily concentrated along waterways, including the Santa Clara River, the South Fork of the Santa Clara River, and east of Sand Canyon Road. A significant deposit of construction-grade aggregate extends approximately 15 miles from Agua Dulce Creek in the east, to the Ventura County line on the west.

In addition, there is a small gravel quarry operation located west of Conejo Mountain area in the westernmost part of the study area. In Grimes Canyon, just west of the study area in the Santa Susana Mountains, there is a rock quarry that harvests rock products including "smoking shale," a decorative rock used for pavers and hard scape which was valued by prehistoric Native Americans for making arrowheads and tools.

Metallic and Non-metallic Mineral Resources

The San Gabriel Mountains are rich in both metallic and non-metallic mineral resources. Most notably, Placerita Canyon, located on the northwestern slopes of the San Gabriel Mountains was a discovery site for gold in 1842, six years before gold was discovered in the Sierran foothills. In the past, Upper Santa Clara River sites yielded, copper, iron, quartz and titanium.

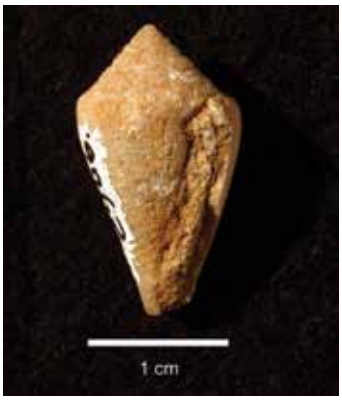
Old terranes in the western San Gabriel Mountains have also been mined for gold. Active gold mining still takes place near Acton where there are quartz vein gold deposits (Morton 1982). Historically, minor amounts of gold were obtained from the Mount Lowe plutonic suite southwest of Soledad Pass (Dibblee 1982). Although small amounts of gold were mined in basement rocks prior to 1940, most have not been profitable.

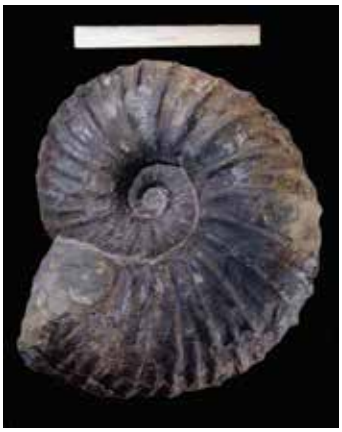
Other known commodities in the San Gabriel Mountains include aluminum, asbestos, asphalt, barite, clays, beryllium, copper, diatomite, feldspar, graphite, iron, limestone products, manganese, mica, oil and gas, platinum, silica, slab rock, silver, titanium, tungsten, uranium, and zirconium. (NPS 2013f)

Paleontological Resources

Paleontological resources are fossilized remains of non-human organisms. Most paleontological sites include remains of species that are now extinct. The study area contains a diverse assemblage of paleontological resources that are sought by collectors, universities, and

Santa Monica Mountains National Recreation Area contains one of the most extensive and diverse assemblages of fossil material known in the national park system.





Many "type specimen" fossils have been found in SMMNRA. Type specimens serve as a standard for other fossil comparisons and are the specimens on which a scientific name is based. Fossil type specimens have been found in 55 national park units; SMMNRA is ninth on the list for number of type specimens discovered. Photos: NPS.

museums (*Table 2-2: Known Fossiliferous Formations of the Rim of the Valley Corridor Study Area and Types of Fossils found in the Formation*).

Santa Monica Mountains

Santa Monica Mountains National Recreation Area (SMMNRA) contains one of the most extensive and diverse assemblages of fossil material known in the national park system. Within SMMNRA there are at least 2,300 known fossil localities found in more than a dozen fossiliferous geologic formations. Invertebrate, vertebrate, botanical, protist, and trace fossils occur, ranging in age from the Late Jurassic to Pleistocene. Fossils that provide the basis for description of species that are new to science are called type specimens. The Santa Monica Mountains have yielded at least 50 type specimens (J. Tweet, pers. comm., Sept. 2014). The most abundant of the fossils found at SMMNRA include bivalves, cephalopods and gastropods while the least abundant fossil remains are plant material. Fossilized fish make up the majority of the vertebrate material and can be found in Late Cretaceous, Miocene, and Quaternary deposits. Other fossil remnants include arthropods, echinoderms, amphibians, reptiles, birds, and mammals (Tweet, et al. 2012).

The quality of preservation is remarkable in many specimens, especially the fully articulated skeletons of fossil fish that can be compared to the caliber of the world-famous Eocene Green River formation fossil fish from Wyoming (Fossil Butte National Monument), Utah, and Colorado. The two most noteworthy fossil localities in the Santa Monica Mountains are the Old Topanga Canyon (Amphitheater) site, which is on private land within SMMNRA, and the fossil fish localities in the Modelo formation, some of which are on private land and some of which are preserved within Fossil Ridge Park, a Santa Monica Mountains Conservancy property (Koch 2004).

Simi HIlls and Santa Susana Mountains

Although many of the rock formations exposed in the Simi Hills and Santa Susana Mountains are the same as those in the Santa Monica Mountains, the fossil species represented here may be distinct due to the changing position of the coastline through the geologic ages. Particularly fossiliferous formations in the Simi Hills and Santa Susana Mountains that also occur in the Santa Monica Mountains are the Llajas and Sespe formations. In addition, there are at least two fossiliferous formations, the Towsley and Pico formations, which are represented in the Simi Hills and Santa Susana Mountains but not in SMMNRA. Numerous type specimens have been found in these formations.

Paleontologists have found dozens of foraminifera micro-fossil species and dozens of mega-fossil species in the Pico formation on the north side of the Santa Susana Mountains in Pico Canyon eastward to the contact with the San Gabriel Mountains in Elsmere Canyon. The upper part of the Pico formation is quite fossiliferous, including marine species such as sand dollars, oysters, and mollusks, particularly in the area around San Fernando Pass (Winterer and Durham 1962).

The Las Virgenes Sandstone formation is present in SMMNRA but is not fossiliferous in the Santa Monica Mountains or Simi Hills within SMMNRA. In the Simi Hills outside of SMMNRA, the Las Virgenes Sandstone formation contains some logs, clams, snails and burrows (Parker 1983a and 1983b, Saul 1983, Squires 1997). In the Santa Susana Mountains, paleontologists have found an abundance and diversity of fossils in the Llajas formation in the Las Llajas drainage on the south side of the range (Squires 1979, 1981a, 1983a, 1983b, 1984, and 2001).

Significant fossil material was also recovered from the Simi Valley landfill during an environmental mitigation for a recent expansion of the landfill. Similarly, construction projects in the Santa Monica Mountains, Simi Hills and Santa Susana Mountains have yielded many specimens. In all, more than 100 fossil mammal species from 35 families have been recognized in the Sespe formation (Lander 1983 and 2011).

Conejo Volcanic Complex

A large portion of the Conejo Volcanic complex, which contains some fossils, is located within the study area outside of SMMNRA. Fossil deposits have been identified on Conejo Mountain in Newbury Park, and on other volcanic hills in the city of Thousand Oaks. These contain sparse fauna (Yerkes and Campbell 1979), fossil wood (Stadum and

Table 2-2: Known Fossiliferous Formations of the Rim of the Valley Corridor Study Area and Types of Fossils Found in the Formation

Geologic Epoch (Million Years Ago, Ma)	Formation (alternate names)	Type	Notable fossil groups
Late Jurassic (157-152 Ma)	Santa Monica Slate	Deep marine	Ammonites, clams
Late Cretaceous (93-75 Ma)	Tuna Canyon	Shallow to moderate depth marine	Foraminifera (amoeba-like protists that secrete shells), ammonites, clams, nautiloids, snails, plant fragments. A number of new species described from this formation in the Santa Monica Mountains.
Late Cretaceous (90-69 Ma)	Chatsworth	Deep marine	Ammonites, nautiloids, snails, shark teeth
Late Paleocene (58-57 Ma)	Simi Conglomerate	Marine and Non-marine	Fossiliferous within SMMNRA. Includes plant fragments, clams, snails, burrows.
Late Paleocene to Early Eocene (57-56 Ma)	Las Virgenes	Marine and Non-marine (fluvial)	Not fossiliferous within SMMNRA. Sparsely fossilferous in Simi Hills and Santa Susana Mountains where logs, clams, snails and burrows have been found.
Middle to Late Paleocene (56-55 Ma)	Santa Susana (Coal Canyon, Martinez)	Shallow marine	Algal limestone reefs, foraminifera, clams, snails, corals, crabs, echinoids, plant fragments, mollusks, pollen, shark teeth. A number of new species described from this formation in Santa Monica Mountains.
Middle to Late Eocene (41-36 Ma)	Llajas (Tejon)	Marine (varying depth)	Foraminifera, petrified wood, corals, cephalopods, shark and ray teeth, Turritella "reefs." Many new species described from this formation in the Santa Susana Mountains.
Late Eocene toEarly Miocene (30-26 Ma)	Sespe	Terrestrial ("redbeds")	More than 130 fossil mammal species from 35 families, petrified logs, palms, tortoise, opossum, rodents, pikas, camels, horses, frogs, insects, birds, snakes, bears, dogs, cats, tapirs, rhinoceroses, hippos, oreodonts (sheep-like ungulate).
Late Oligocene to Early Miocene (25-18 Ma)	Topanga Canyon and Non-marine	Marine (various)	Extensively fossiliferous in SMMNRA. Plant fragments and foraminifera. The privately owned Old Topanga amphitheater site is a marine layer of this era. It is the best known fossil site in Santa Monica Mountains (133 species). Fossils found here include whales, sea lions, sharks, rays, snails, clams and many more.
Early to Middle Miocene (20-15 Ma)	Tick Canyon (Soledad basin only)	Terrestrial	Pocket mice, rabbits, horse, oreodonts, camels, hawk
Early to Middle Miocene (17-15 Ma)	Conejo Volcanic	Volcanic (submarine and subaerial)	Petrified wood of various tree species, more than 70 species of invertebrate taxa including clams, snails, and barnacles considered rare from this era on the Pacific coast, and fish scales.
Middle Miocene (15-14 Ma)	Calabasas (Upper Topanga)	Deep marine	Foraminifera, diatoms, plant casts, clams, snails, barnacles, echinoids, fish scales, whales. Whale bones also found in Santa Susana Mountains and Simi Hills.
Middle to Late Miocene (13-6 Ma)	Modelo (Monterey)	Deep marine	Clams, snails, plant leaves, echinoids, shark teeth, sea lion, dolphin, and whale bones, and horse bones. This formation includes the spectacular cartilaginous and boney fish of Fossil Ridge Park and vicinity. 20 genera of fish from 18 families have been described from this site; 6 of these were new to science. This formation includes the extinct large "toothed" bird (Osteodontornis orri) found in the Sherman Oaks area and the Lincoln Heights Whale.
Late Miocene to Early Pliocene (6-4 Ma)	Mint Canyon (Soledad basin only)	Terrestrial	Horses, camels, rhinoceros, antelope, carnivores
Late Miocene- Early Pliocene (6-4 Ma)	Towsley	Shallow to deep marine	Foraminifera, mollusks, bi-valves, pelecypods, gastropods, (6-4 Ma) brachiopods, shark teeth, paleo-currents
Pliocene (4-3 Ma)	Pico (Repetto/Fernando)	Shallow marine	Brachiopods, clams, snails, echinoids in SMMNRA. Foraminifera, mollusks, gastropods, bivalves in Santa Susana Mountains and San Gabriel Mountains.
Lower Pleistocene (3-1 Ma)	Saugus	Terrestrial	Near Moorpark/Simi Valley fossils found include rodents, rabbits, mammoths, tapirs, horses, and llamas.

Sources: Tweet et al. 2012, Koch et al. 2004, Winterer and Durham 1962, NPS 2013, and Fritsche 2012
Note: Although the formations are listed from oldest to youngest, the stratigraphy of the study area varies by location.



A layer of scallop fossils up to several feet thick, known to paleontologists as the "pectinid marker bed," can be found in roadcuts throughout the central Santa Monica Mountains. This 20 million year old layer of fossil bi-valves is used by scientists to date rock layers in the field. Photo: NPS.



These 12 million year old herring fossils are one of twenty genera of fossil fish from 18 different families that have been identified in the Miocene Modelo formation in the eastern Santa Monica Mountains. SMMNRA contains one of the most extensive and diverse assemblages of fossil material known in the National Park Service. Photo: NPS.

Weigand 1999), and pockets of invertebrates in calcareous sandstone (Stanton and Alderson 2006, 2010).

San Gabriel Mountains (including Upper Santa Clara River)

The San Gabriel Mountains are primarily igneous in nature and therefore do not contain many fossils. The major exceptions are the Mint Canyon and Tick Canyon formations, which occur on the north side of the western San Gabriel Mountains within the study area. Neither of these formations is found within the SMMNRA boundary. The Mint Canyon formation includes vertebrate fossils such as Merychippus, Hipparion, Alticamelus, rhinoceroses, antelopes, and carnivores (Mount 1971). The Tick Canyon formation includes pocket mice, rabbits, grazing horses, oreodonts, camels and a hawk (Savage et al. 1954) (Oakeshott 1958).

Water Resources

Geographic Scope

The major rivers and tributaries of the study area in many cases have watersheds that extend beyond the Rim of the Valley Corridor. Descriptions of the broader watersheds of major river systems are described in this section.

Major Watersheds

The study area contains portions of four major watersheds: the Santa Clara River watershed, the Calleguas Creek watershed, the Santa Monica Bay watershed, and the Los Angeles River watershed. (*Figure 2-3: Major Watersheds*). The study area is located within the South Coast Hydrologic Region, which includes seven percent of the state's total land area and approximately 54% of the state's population (USACOE 2013).

Rivers and creeks in the study area have undergone significant changes since European settlement, most notably where there is urban development. Early explorers and surveyors provided detailed descriptions of water features in the Los Angeles basin and Santa Clara River valley. In the mountains and foothills, coastal watersheds feature largely natural streams with flows that range from intermittent to year round. In the northern study area, the Upper Santa Clara River remains largely natural, without major modifications. Where Calleguas Creek flows through the eastern Oxnard Plain near the base of the Santa Monica Mountains, it is channelized for flood protection. In the urbanized Los Angeles basin, river systems have been engineered to protect homes and businesses from flooding.

Santa Clara River Watershed

The Santa Clara River is the largest river system in southern California that remains in a relatively natural state. The river flows approximately 84 miles and drains 1,200 square miles from its headwaters to into the Pacific Ocean at the border between the cities of Ventura and Oxnard (City of Santa Clarita 2011). Principal tributaries to the Upper Santa Clara River include creeks located in Mint, Bouquet, San Francisquito, Castaic, and Oak Spring Canyons north of the Santa Clara River; and Soledad, Sand and Placerita Canyons south of

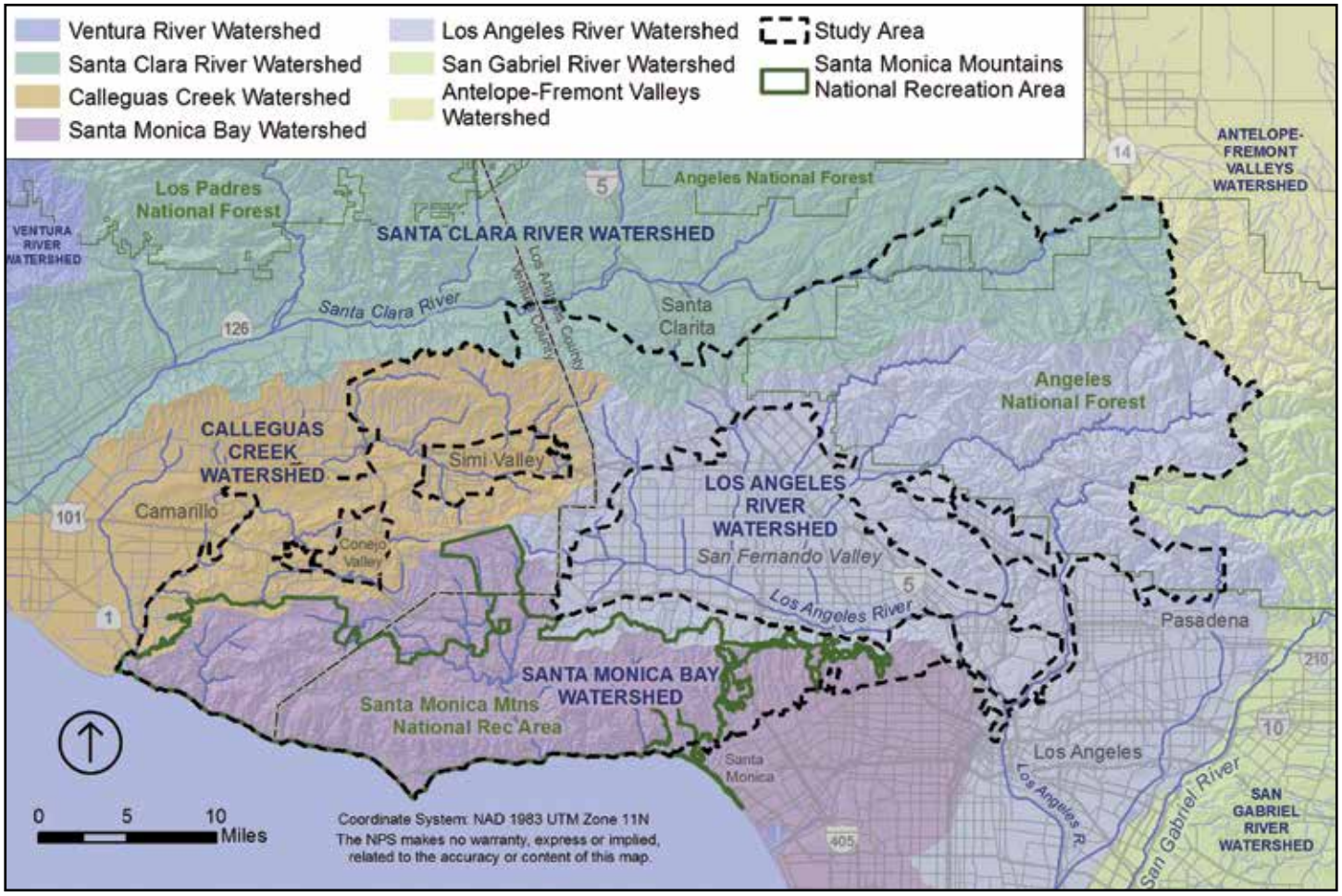


Figure 2-3: Major Watersheds

The Santa Clara River is the largest river system in southern California that remains in a relatively natural state.

the Santa Clara River. The Upper Santa Clara River Watershed is located within the study area, including the north facing slopes of the San Gabriel and Santa Susana Mountains, and the southern area of the Santa Clara River Valley basin.

The Santa Clara River was described by early European settlers in the mid-1700s as having lush vegetation such as oak, cottonwood and willow that would be consistent with a steady source of water. Tributaries in the upper river, such as San Francisquito Canyon were described as dense riparian vegetation, which in places would fill entire canyons. Wetlands were also common as part of the watershed system, supporting wetland plants and a diverse array of birds (VCWPD & LACDPW 2005). Like other river systems in southern California, the Santa Clara River flooded periodically.

Flooding from the Santa Clara River periodically damaged agricultural lands and destroyed homes and infrastructure in the early part of the 20th century. Some physical alteration to the river from railroad development occurred as small agricultural towns established along the rail routes. The Saint Frances Dam was constructed in San Francisquito Canyon between 1924 and 1926 by the City of Los Angeles as part of the Los Angeles Aqueduct system. Only two years after its completion, the dam failed catastrophically, flooding the canyon and Santa Clara River Valley below, and significantly altering the physical shape of the river valley. The resultant flood killed over 400 people, destroyed 1,250 homes, and washed away 23,700 acres of orchards in what was one of the worst civil engineering disasters of the 20th century. A series of protective levees and groins were installed as a result. These became some of the earliest public works along the Santa Clara River (VCWPD & LACDPW 2005). Because of agricultural uses in the Santa Clara River Valley and less development, the river was not channelized to the same extent as the Los Angeles River, and thus remains in a more natural condition.

The only major dams in the watershed are located outside of the study area in the Sierra

Due to development in the watershed, Calleguas Creek is now a perennial stream and continuously fed by treated wastewater flows.

Pelona, north of the Santa Clara River. No major dams have been located on the main river channel, although the Vern Freeman Diversion Dam, downstream of the study area, diverts water for the United Water Conservation District. The Santa Clara River is also the last free-flowing riparian and wildlife corridor in the region, providing the primary remaining east-west biological connection between the San Gabriel Mountains and the Pacific Ocean (California Coastal Conservancy 2001).

The Upper Santa Clara River is largely ephemeral. As the river exits the confinement of the mountains, it has braided stream geomorphology characterized by the frequent shifting network of channels and intervening bars in a broad floodplain, which is typical of braided streams (LADPW 2005).

Calleguas Creek Watershed

The Calleguas Creek watershed is located in southwestern Ventura County, and drains 343 square miles of land including the western slopes of the Santa Monica Mountains, the Conejo and Simi Valleys and surrounding mountains and hills, and southern portions of the Oxnard Plain. Calleguas Creek enters the Pacific Ocean at Mugu Lagoon. Major tributaries to Calleguas Creek include Revolon Slough, Conejo Creek, Arroyo Santa Rosa, Arroyo Conejo, Arroyo Las Posas, and Arroyo Simi.

Historically, Calleguas Creek and its tributaries were intermittent and flowed seasonally, entering the Oxnard Plain somewhere between Somis and Mugu Lagoon, never reaching the Pacific Ocean. The Oxnard Plain was built from the sediments carried by the flood waters of the Santa Clara River starting about 300,000 years ago. A combination of rapid uplift of onshore areas and a later warming trend resulted in the creation of Mugu Lagoon and a shift of the Santa Clara River to its current location. Due to continued flood damage to lowland agricultural areas, local farmers from Somis began to channelize Calleguas Creek beginning in 1884, and Revolon Slough around 1924. Eventually, the creek was completely channelized (VCWPD 2010).

Due to development in the watershed, Calleguas Creek is now a perennial stream and continuously fed by treated wastewater flows, with secondary surface flows originating from rising groundwater, agricultural and urban runoff, and periodic stormwater flows (VCWPD 2010). The creek now drains through Mugu Lagoon to the ocean.

Mugu Lagoon is part of the Point Mugu Naval Air Weapons Station and is one of the largest relatively undisturbed salt marshes in southern California. The lagoon is a vital stop on the Pacific Flyway, a nursery ground for many marine fish and mammals, and is also a vital habitat for several threatened and endangered species. Some of these include the California least tern, light-footed clapper rail, Belding's savannah sparrow, and the tidewater goby. Although Mugu Lagoon has not been affected as much as other lagoons and estuaries in southern California, it has been altered. The effects of agriculture and urbanization within the Calleguas Creek watershed and past base construction and other activities in the lagoon area by the U.S. Navy have resulted in significant changes and loss of habitat (Stoms et al. 2013).

Santa Monica Bay Watershed

The Santa Monica Bay watershed includes many smaller watersheds that drain directly into the Pacific Ocean via intermittent and perennial streams. Numerous north-south trending canyons in the Santa Monica Mountains create more than 40 separate subwatersheds of Santa Monica Bay. Malibu Creek is one of the larger subwatersheds and is unique as the only waterway that cuts through the Santa Monica Mountains, draining the Simi Hills as well as portions of the Santa Monica Mountains.

The Malibu Creek subwatershed includes 105 square miles and incorporates several major drainage basins (Medea Creek, Triunfo Creek, Cold Creek, Malibu Creek, Sleeper, Las Virgenes, and Potrero Valleys). The Malibu Creek watershed contains a total of 225 stream segments within six major drainages (Stoms et al. 2013). The watershed terminates at the estuarine wetlands and salt marsh of Malibu Lagoon which provides habitat to numerous migratory water birds, supports a dense riparian forest, includes habitat for the endangered tidewater goby and supports the southernmost reliable run of steelhead trout in the United States. There have been many altera-

Because most of the watersheds in the Santa Monica Mountains have not been extensively developed, historic conditions largely exist, with springs and seeps common and widespread, supplying numerous streams.

tions to the lagoon, from stream channelization to bringing in fill to construct baseball fields (Stoms et al. 2013).

Because most of the watersheds in the Santa Monica Mountains have not been extensively developed, historic conditions largely exist, with springs and seeps common and widespread, supplying numerous streams (NPS 2002). Although most streams within the mountains flow seasonally, additional runoff generated from developed areas has contributed to changes in stream flows. For instance, in the Malibu Creek watershed, wastewater treated at the Tapia Water Reclamation Facility is either discharged to Malibu Creek or sold for local landscape irrigation. Additionally, the residences and businesses of Malibu use septic systems for wastewater disposal, potentially affecting quality of local groundwater and coastal and lagoon waters.

Other changes to historic conditions include the introduction of road culverts, low-water crossings, and small and large dams such as Rindge Dam that affect aquatic habitat connectivity (NPS 2002). Within the Santa Monica Mountains, it is believed that self-sustaining populations of southern steelhead trout once resided in Big Sycamore, Arroyo Sequit, Zuma, Malibu, Solstice and Topanga Creeks, among others. Today, however, only a small number of steelhead trout spawn in Arroyo Sequit, Topanga and Malibu creeks because of these barriers to steelhead migration (NPS 2002).

Los Angeles River Watershed

The Los Angeles River watershed is approximately 834 square miles and includes the most urbanized portions of the study area. It also drains the Santa Monica Mountains, Simi Hills, Santa Susana Mountains, Verdugo Mountains, San Gabriel Mountains, and Los Angeles basin, before reaching the Pacific Ocean in Long Beach.

In the Los Angeles basin, which has probably experienced the most modification of any of the natural waterway systems in the study area, rivers and creeks were wide, gravelly channels referred to as washes. Many were a half a mile wide or more. Most of the waterways were ephemeral, appearing dry for much of the year only to become powerful torrents during the rainy season, depositing sediment across the basin as the water would slow and spread (USACOE 2013). As these water systems shifted dramatically across the basin over time, complex landscape patterns were created that supported a variety of habitat types. These patterns became even more intricate as streams would "disappear" into the gravels and then later rise to the surface, creating wetlands, some of which were fed by springs, particularly in areas near geologic faults such as the Raymond basin beneath the Pasadena area.

With expanding human settlement in the Los Angeles basin, rivers and streams became constrained while both surface and groundwater resources were tapped for agriculture, domestic and eventually industrial uses. In the late 19th and early 20th centuries, periodic major storms caused catastrophic flooding resulting in significant loss of life and property, prompting public support for flood protection, which eventually resulted in the network of stormwater and sediment basins, dams, and channelized rivers and streams that characterize many of southern California's urban and suburban watersheds today.

Featuring one of the most extensive flood protection systems, virtually the entire main stem of the river has been channelized and paved to protect downstream urban areas from flooding. Portions of the watershed in the mountainous areas have year round water supplied by springs. These areas provide high quality habitat for plants and animals.

The Los Angeles River has seven main tributaries and subwatersheds. Portions of six of these are within the study area. They include: the Burbank Western Channel, Pacoima Wash, Tujunga Wash, Verdugo Wash, Arroyo Seco, and Rio Hondo subwatersheds. The upper watersheds are characterized by steep sloping channels that are among the most prolific sediment-producing channels in the world. The watershed is characterized by a series of flood management facilities including sediment basins, dams and engineered channels.

A small portion of the northwestern area of the Rio Hondo River is included with in the study area. The Rio Hondo formerly meandered across the basin as a channel to the San Gabriel and Los Angeles Rivers. The Rio

In the late 19th and early 20th centuries, periodic major storms caused catastrophic flooding prompting public support for flood protection, which eventually resulted in today's network of stormwater and sediment basins, dams, and channelized rivers and streams.

Hondo has now been engineered as a permanent tributary to the Los Angeles River for flood control, while continuing to provide a hydrological connection between the two rivers (LADPW 2006; California Coastal Conservancy 2001).

Flood Management

Flood management in the study area is largely the role of the U.S. Army Corps of Engineers, Los Angeles County Flood Control District, and Ventura County Watershed Protection District, which was known as the Ventura County Flood Control District prior to 2003. Many flood management facilities serve multiple functions by also conserving and storing water as well as sediment.

Episodic heavy rains combined with the steep terrain within the study area results in periodic floods of sediment and debris-laden water. Conflicts with human settlement, particularly in the 20th century, have made flood management a priority. Extensive flood protection and water conservation systems were constructed by Los Angeles County and the Army Corps of Engineers throughout the first half of the 20th century in the Los Angeles basin. Formal flood management was established later in Ventura County when the Ventura County Watershed Protection District (then known as the Ventura County Flood Control District) was formed in 1944.

There are a number of different types of facilities that contribute to flood management systems. Dams and reservoirs provide for flood protection while often contributing to water conservation efforts by facilitating groundwater infiltration. Debris and detention basins capture sediment, debris and water, and are typically located at the mouths of canyons. The purpose of these basins is to remove sediment from water to prevent scouring and damage to engineered channels downstream. Downstream of most dams, reservoirs and debris basins, rivers and creeks have been straightened (channelized) and hardened to confine flow during heavy rains.

Flood management structures are a dominant feature in the study area, primarily in the Los Angeles basin. Within the study area there are numerous dams and debris and detention basins, mostly within Los Angeles County (*Table D-1: Dams within the Study Area* and *Table D-2: Debris and Detention Facilities in the Study Area* in *Appendix D; Figure 2-4: Flood Protection and Water Storage/Transfer Facilities*).

A brief history of the Los Angeles County flood protection and water conservation system is described in the Cultural Resources section of *Chapter 2*.

Water Conservation and Supply

Water is a scarce resource in the region, and the role of the natural landscape in providing it has been significant. The importance of the San Gabriel Mountains as a water source was apparent to early settlers who relied on the mountains to provide water from the canyons to farmlands (Robinson 1991). The City of Pasadena petitioned the California Board of Forestry in 1888 to protect the San Gabriel Mountains for its watershed values. During this time, excessive timber harvest was impacting water quality and destroying mountain springs and watercourses used to irrigate the San Gabriel Valley. In response, the State of California established the San Gabriel Forest Reserve in 1891. Watershed protection was the primary impetus for its establishment.

Groundwater and Water Conservation Systems

Groundwater basins, or aquifers, are natural underground formations filled with water and sediment, including sand and gravel. The study area is located within the South Coast Hydrologic Region and includes all or portions of 17 groundwater basins (*Table D-3: Groundwater Basins* in *Appendix D*). Wells drilled into the basins provide water for municipal and agricultural uses.

Groundwater has been used in southern California for well over 100 years and continues to provide a significant portion of the region's water supply. The amount varies depending on the water supplier, but in the City of Los Angeles, groundwater contributes to approximately 12% of the City's supply and up to 30% during droughts (LADWP 2010). At the other end of the spectrum, groundwater is the primary source of locally used water in Ventura County, supplying 67% of water (VCWPD 2013).

High demand and use of groundwater in southern California has given rise to many disputes over management and pumping rights,

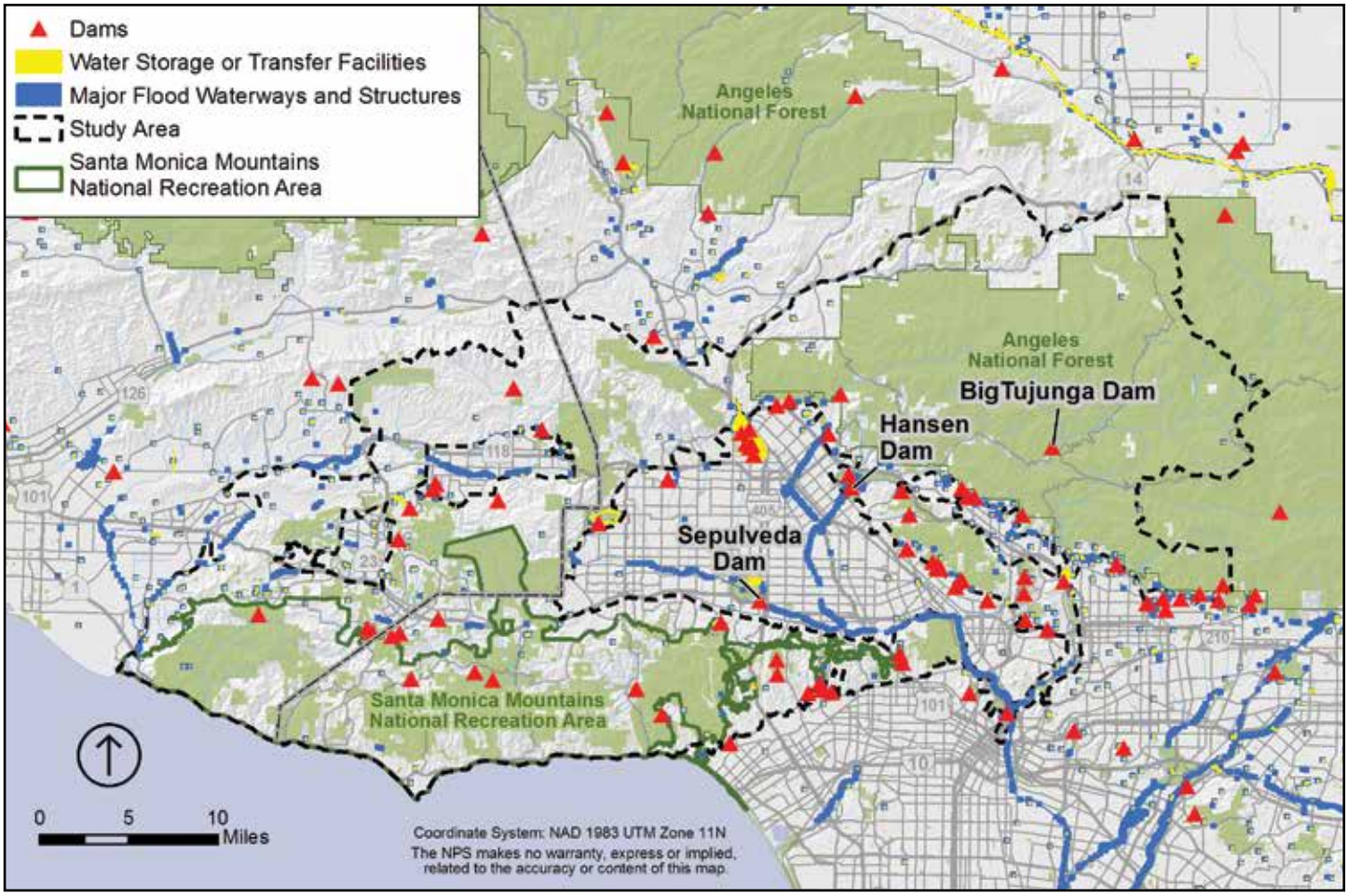


Figure 2-4: Flood Protection and Water Storage/ Transfer Facilities

with the resolution of these cases playing a large role in the establishment and clarification of water rights law in California. Raymond groundwater basin, located in the eastern portion of study area, was the first basin in California to have water rights determined through an administrative or judicial process known as adjudication. Of the 16 adjudicated groundwater basins in California, 11 are in the South Coast Hydrologic Region (California Department of Water Resources 2003).

Use of groundwater in the region combined with surface water use has evolved into a practice referred to as "conjunctive use." During wet years, when more surface water is available, it is directed into water conservation facilities known as spreading basins, which are typically located along rivers and tributaries downstream of reservoirs. In these spreading basins, water percolates into groundwater aquifers where it is stored for future use. During dry years, the stored water is available to supplement or replace diminished surface water supplies. Spreading basin facilities are also used to move imported water into groundwater basins for storage purposes. Some of the largest of the region's water conservation facilities are located within the San Gabriel River watershed, outside of the study area. However, there are several spreading basin facilities throughout the study area. Along tributaries of the Los Angeles River there are six spreading basins (LADPW 2013b).

Imported Water

A major challenge in water management in the region is the variability in available surface water due to the region's climate. Imported water supplements local surface and groundwater resources for municipal use in the greater Los Angeles metropolitan region. The Metropolitan Water District of Southern California (MWD), a consortium of 26 cities and water districts, functions as a water wholesaler that bridges the gap between local water supplies and demand. MWD receives water via the Colorado River Aqueduct and the State Water Project's California Aqueduct, the latter of which conveys water from northern California. The other major source of imported water to the area is the City of Los Angeles'





Left photo: Basins to retain stormwater runoff, like these along the Arroyo Seco, are common features in the San Gabriel foothills. Basins capture water and recharge it in groundwater basins for future use. Center photo: Hahamongna Watershed Park, located along the Arroyo Seco corridor at the base of the San Gabriel Mountains, is a major flood management basin behind Devils Gate Dam. The basin contains large areas of riparian and oak woodland habitat, with remnants of alluvial fan sage scrub. Right photo: Like many natural waterways through the Los Angeles basin, the Arroyo Seco was channelized for flood protection. Photos: NPS.

Los Angeles Aqueduct, which conveys water from the Eastern Sierra Nevada Mountains, Mono basin, and Owens Valley in California (LADWP 2011). The conveyance facilities for these sources of imported water include a series of canals, reservoirs, and spreading basins. A history of these conveyance systems is provided in the cultural resources description that follows.

Wastewater and Recycled Water

Recycled water is used for municipal use such as irrigation, industrial applications, environmental uses, groundwater replenishment, or maintenance of seawater barriers to groundwater basins along the coast. The remainder is discharged into creeks and rivers. In some cases, this input of water into waterways has transformed historically intermittent streams into perennial streams. There are ten water reclamation plants within the study area (*Table D-4: Water Reclamation Plants in the Study Area* in *Appendix D*).

Biological Resources

Geographic Scope

The geographic scope of the biological resources description primarily corresponds to the study area. However, because wildlife rely on broader migration and habitat corridors that extend beyond the study area, the extent and importance of those corridors to the biological resources of the study area is described in this section. *Figure 2-8: Wildlife Linkages* conveys the extent of areas important for maintaining healthy wildlife populations.

Historic Ecological Conditions

Although no comprehensive inventories and studies of the region's biological resources were conducted by early Spanish explorers, diaries and journals kept during expeditions help paint a picture of the pre-European landscape. Diaries kept by Juan Crespi, a padre in the overland expedition led by Captain Gaspar de Portola in 1769-1770, provide some of the most detailed early descriptions of the study area's plants and animals. Accounts written by Pedro Fages of the Portola expedition, Pedro Font of the Juan Bautista de Anza expedition in 1775, and early settlers also provide insights into the historic conditions of the area. As settlement increased in the region, more formal surveys of the area's resources were conducted, including railroad surveys and vegetation mapping projects. These accounts help to illustrate both the historic array of plant and animal species of the area as well as the structure and dynamics of the landscape.

The natural communities that dominated the pre-European settlement landscape of the Los Angeles region included chaparral, coastal sage scrub and prairie (Schiffman 2005). Woodlands and forests of walnut and oak could be found in canyons and adjacent hillsides, and along waterways and floodplains, riparian plants, including willow, cottonwood, mulefat and sycamore, were common. All of these have been reduced over time by human settlement and associated agriculture, ranching, introduction of invasive plant and animal species and development. Although chaparral

Although chaparral and coastal sage scrub still characterize many of the region's undeveloped steep hillsides and mountain slopes today, the plains and valleys of the Los Angeles region have undergone the most change from the loss of the California prairie that once covered these wide valleys.



Purple needlegrass (*Nasella pulchra*) is a dominant species in the California prairie which has been significantly reduced in the Los Angeles region. Photo: NPS.

and coastal sage scrub still characterize many of the region's undeveloped steep hillsides and mountain slopes today, the plains and valleys of the Los Angeles region have undergone the most change from the loss of the California prairie that once covered these wide valleys. The vegetation of these prairies included grasses, wildflowers and forbs, with as many as half of the species being opportunistic annuals that were adapted to periodic drought and soil disturbance (Schiffman 2005). Dominant species included perennial bunchgrasses such as purple needlegrass (*Nassella pulchra*), nodding needlegrass (*Nassella cernua*), foothill needlegrass (*Nassella lepida*), and crested needlegrass (*Achnatherum coronata*). Herbaceous plants such as wildflowers, sedges, and bulbs were also common (Burcham 1957).

A substantial amount of riparian habitat has also been lost due to flood management facilities, water infrastructure, and development. Native grasses and prairie vegetation have been largely displaced by invasive grass and forb species introduced by Spanish explorers and settlers. These introduced plants easily naturalized in southern California's Mediterranean-type climate, in part due to the similar conditions in Spain (Schiffman 2005).

Father Crespi described the Los Angeles River as a "good sized, full flowing river…with very good water, pure and fresh." "Very large, very green bottomlands" spread from the banks as far as he could see, "looking from afar like nothing so much as large cornfields." He also observed the Arroyo Seco draining into the Los Angeles River, noting that the bed was dry, but "the beds of both are very well lined with large trees, sycamore, willows, cottonwoods, and very large live oaks." Other vegetation near the Los Angeles River included brambles, native grapevines, and wild roses (Gumprecht 1999).

Early explorers described the Los Angeles region as being rich in wildlife. Large mammals included coyote, wolf, fox, deer, antelope, mantugar (described as "like a suckling pig"), mountain lion, and grizzly bear (Fages 1919, USACOE 2013). There were also many reptiles and amphibians (Crespi 2001, Fages 1919). A wide variety of birds occupied the river and surrounding landscape, including large populations of species now considered rare, such as yellow-billed cuckoo, least Bell's vireo, clapper rail, golden eagle, and burrowing owl (USACOE 2013). It is estimated that the varied nature of the river created a highly diverse environment and the floodplain forests formed one of the most biologically rich habitats in southern California (USACOE 2013). Bird species adapted to wide open spaces were also common, including the western meadowlark and horned lark. The California condor was also present in the San Fernando Valley (Schiffman, n.d.).

The Portola and Anza expeditons observed pronghorn antelope (*Antilocarpa americana*) in the San Fernando and Conjeo valleys. Early settlers noted vast populations of rabbits, hares and rodents, and expansive networks of burrows across the plains and valleys (Schiffman 2005). Grizzly bears (*Ursus arctos*) were also a noted inhabitant of the area and associated with open landscapes, particularly given the presence of small mammals that would provide food for these large predators. One of the last surviving grizzly bears in southern California was killed in 1916 in Big Tujunga Canyon. Other predators likely included coyotes, long-tailed weasels (*Mustela frenata*), and badgers (*Taxidea taxus*). In the mid-1850s the U.S. government commissioned surveys of the region to identify the best route for a railroad, which also made several observations about the Santa Clara River area. At the upper end of the river,"…the growth of timber and willows along the creek, … filled the whole valley between the ridges on either side… we were obliged to cut our way out through the thickets and form a road for the wagon." They also observed a black-shouldered hawk (*Elanus leucurus*), "…hovering over a freshwater marsh," and found and named the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) near the river's headwaters. Later surveys in the 1870s and 1880s noted tule (*Scirpus validus*) in the swampy areas of the river. A list of birds observed indicates species closely associated with riparian habitats including several birds widely distributed in the 19th century but now rare, such as Ross' goose, trumpeter swan, white-tailed kite, golden eagle, bald eagle, peregrine falcon, and osprey (VCWPD and LADPW 2005).

In 1917, a committee of the Ecological Society of America was charged with "the listing of all preserved and preservable areas in North America in which natural conditions persist."



Of the predators that inhabitated the region historically, coyotes are among those that remain. Photo: NPS.

Significant portions of the native plant cover in the region have been lost due to grazing, agriculture, and ultimately, urban development.

The summary was published in 1926 and in the section that addresses California, several descriptions of different natural communities were outlined and specific sites recommended for preservation. In describing chaparral, it was noted that, "…chaparral is of little economic value except as a soil cover in preventing erosion and retarding floods…in this field it is of primary importance…to protect the watersheds of southern California." Watershed protection was a key factor in designating the Angeles National Forest.

A dataset of vegetation types was compiled in the 1920s and 1930s for most of California. The Wieslander Vegetation Type Map (VTM) data includes photos, species inventories, plot maps, and vegetation maps. Although there had already been significant changes in vegetation patterns at the time these data were collected, the maps help to illustrate the plant communities of the early 20th century and provide a baseline for assessing change over time. In the Santa Monica Mountains, the VTM maps show that 19% of the area had already been converted to agriculture and urban uses in 1945. A comparison of the maps to 2009 data showed that 22-24% of chaparral and coastal sage scrub present in the Santa Monica Mountains has been converted to human-dominated uses (Stoms et al. 2009).

In recent decades, many biological surveys and inventories have been conducted within the study area, including vegetation inventories, surveys associated with environmental impact reports, studies of individual species locations and movement, reports on habitat, flora, and fauna of various public lands, and more. However, these studies have all been limited to particular geographic areas, and often to particular biota, meaning that biological data does not exist at an equal level of detail throughout the study area. In addition, this means that biological resources, such as rare plants, animals, and habitats, may exist in unsurveyed areas beyond their current known locations.

Ecological Overview

The varied landscape and microclimates of the study area contain examples from most of the vegetation types and wildlife found in southern California today. From the high peaks of the San Gabriel Mountains to the coast of the Santa Monica Mountains, differences in climate, soils, and geology set the stage for a wide array of plant communities. Montane forest, scrub, desert, grassland, and coastal communities can all be found within relatively short distances. These plant communities provide habitat to an abundance of wildlife.

The study area is part of the large California Floristic Province which is defined by natural characteristics rather than political boundaries and includes the geographic area containing plants that are characteristic of California and that are best developed in the state (Ornduff 1974; Howell 1957). This boundary includes portions of southern Oregon and northern Baja California but excludes the deserts and Great Basin areas of the state that are more floristically related to adjacent provinces. The California Floristic Province contains a remarkable number of habitats and species, including a very high proportion of endemic species found only within the province.

The study area lies within the southernmost portion of the California Floristic Province, an area often referred to as the South Coast ecoregion. This ecoregion extends north into the Transverse Ranges and is bordered to the east by the Sonoran and Mojave Deserts.

California's South Coast Ecoregion exhibits high biological diversity, supporting more than 33% of California's native plant species in only eight percent of the land area (Sawyer et al. 2009). More endemic plant and animal species occur in this ecoregion than any other ecoregion in the country (Stein et al. 2000). This species richness and high endemism is contained within a comparable diversity of vegetation assemblages generally characterized by evergreen shrublands typical of Mediterranean-climate regions (Rundel and Tiszler 2007). Vegetation consists primarily of sclerophyllous (hard-leaved) chaparral and drought-deciduous coastal sage scrub occurring in association with woodlands, grasslands, and riparian habitats. These general types are acted upon by complex geology and topography, soils, differences in moisture and temperature regimes, and varying fire histories to create a diverse array of vegetation alliances and associations unique to the region (CBI 2001, Barbour et al. 2007, Keeler-Wolf et al. 2007).

California's South Coast Ecoregion is exhibits high biological diversity, supporting more than 33% of California's native plant species in only eight percent of the land area (Sawyer et al. 2009). More endemic plant and animal species occur in this ecoregion than any other ecoregion in the country (Stein et al. 2000).

Significant portions of the native plant cover in the region have been lost due to grazing, agriculture, and ultimately, urban development. Because of this almost all of the native plant communities that remain contain sensitive, rare or endangered flora and fauna. The South Coast ecoregion contains the mega-city of the greater Los Angeles area, which both further highlights the remarkableness of its current diversity and the ongoing threats to this hotspot of biodiversity.

The following sections give a broad overview of the vegetation and wildlife resources found in the study area. Examples in text boxes throughout highlight species and habitat that represent the unique Mediterranean-type ecosystems and high levels of biodiversity found in the study area.

Vegetation and Habitat

The vegetation and habitat of the study area is described below according to the California Wildlife Habitat Relationships System (CWHR) habitat classification scheme which was developed to support the CWHR System, a wildlife information system and predictive model for California's regularly occurring birds, mammals, reptiles, and amphibians (CDFG 2008) (*Figure 2-5: Vegetation*).[1]

Within the broad habitat classifications described below are many more specific vegetation communities, several of which are sensitive or rare. Over 30 vegetation alliances considered imperiled under NatureServe's Heritage Methodology[2] have been identified in the study area. Because comprehensive biological surveys have not been conducted for all portions of the study area, it is likely that additional imperiled alliances exist or might be found in new locations within the study area. Known imperiled vegetation associations are listed in *Table D-5: Imperiled Vegetation Communities* in *Appendix D.*

Grassland

Annual grassland

Annual grassland primarily occupies what was once California prairie. Introduced annual grasses are the dominant plant species in this habitat. These species include wild oats (*Avena* spp.), soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis* ssp. *rubens*), wild barley (*Hordeum murinum* ssp. *leporinum*), true clovers (*Trifolium* spp.), and many others. Remnants of native plants and grasses are also found in this habitat including California poppy (*Eschscholzia californica*), purple needlegrass (*Nassella pulchra*), and Idaho fescue (*Festuca idahoensis*) (CDFG 2008).

Within the study area, annual grasslands are primarily found in the Santa Susana Mountains, Simi Hills, and Conejo Mountain areas, as well as the Upper Santa Clara River and San Gabriel Foothills. Remnant native grasslands in these areas typically occur in scattered patches. These include foothill needlegrass, giant wild rye, nodding needle grass, and purple needle grass grassland communities. Several good examples of native grasslands are found within the study area, particularly at Laskey Mesa in the Simi Hills.

Shrub Dominated Communities

Chaparral

Chaparral is the most common vegetation type in the study area. Chaparral consists of a broad mix of robust, woody, predominantly evergreen shrubs that generally occur on steep slopes and hillsides below 5,000 feet elevation. Dominant species consist of broad-leaved or needle leaved sclerophyllous (hard-leaved) shrubs that often grow in 5-10 foot high nearly impenetrable stands with little or no understory. Where shrub stands are less dense, understory plants can include nonnative grasses

[1] The CWHR classification scheme gives a broad perspective of the habitat types in the study area, but does not represent the diversity of distinct plant communities. The California Manual of Vegetation (Sawyer et al. 2009) is widely recognized as the standard classification system for California vegetation. This scheme includes over 450 communities, which generally require field visits for accurate identification and mapping. Plant community data at this level of detail is not available for the entire study area. The CalVeg system from the USFS uses remote sensing to map state-wide vegetation according to a national vegetation classification scheme, which is more specific than the CWHR, but less specific than the California Manual of Vegetation. According to CalVeg, the study area contains 83 vegetation dominance types.

[2] Nature Serve 2013, the accepted standard by the California Department of Fish and Game, California Native Plant Society and the California Manual of Vegetation.

Coastal sage scrub is one of the most threatened plant communities in California. Only 15% of coastal sage scrub's historic range remains in southern California. This habitat is of the highest priority for preservation (CBI 2001, Davis et al. 1998, NPS 1973).

and forbs. Dominant shrubs include chamise (*Adenostoma fasciculatum*), laurel sumac (*Malosma laurina*), various ceanothus species including chaparral whitethorn (*Ceanothus leucodermis*), scrub oak (*Quercus berberidifolia*), and toyon (*Heteromeles arbutifolia*). In higher elevations, shrubs are frequently interspersed as understory vegetation within oak and conifer woodlands (LADRP 2012a).

Mixed chaparral is the most common vegetation type in the study area. It is floristically diverse and contains approximately 240 species. Typically associated shrubs include chamise, silk-tassel (*Garrya elliptica*), toyon, yerba-santa (*Eriodictyon californicum*), California fremontia (*Fremontodendron californicum*), scrub oak, and several species of ceanothus and manzanita (*Arctostaphylos* spp.). *Chamise-redshank chaparral* is also found throughout the study area, and consists of nearly pure stands of chamise or redshank (*Adenostoma sparsifolium*). *Montane chaparral* is less common within the study area, found only above 7000 feet elevation in the San Gabriel Mountains and the Upper Santa Clara River area. The structure and species composition of montane chaparral varies greatly by location, soil type, and aspect (CDFG 2008, Davis et al. 1994).

Coastal Sage Scrub

Coastal sage scrub is the second most common vegetation type in the study area, found throughout the study area at elevations below 1,500 feet. It typically occurs on hot or dry south or west-facing slopes and forms dense stands which grow three to four feet in height. Coastal sage scrub is dominated by drought-deciduous, low, soft-leaved shrubs and herbs. Dominant species typically include California sagebrush (*Artemisia californica*), purple sage (*Salvia leucophylla*), black sage (*S. mellifera*), white sage (*S. apiana*), goldenbush (*Ericamerica* sp.), buckwheat (*Eriogonum fasciculatum*), foothill yucca (*Hesperoyucca whipplei*), California brittle bush/sunflower (*Encelia californica*), golden yarrow (*Eriophyllum confertiflorum*), chamise, hoary-leaf lilac (*Ceanothus crassifolius*), and a variety of annuals and bulbs. Coastal sage scrub also often intergrades with mixed chaparral (LADRP 2012a).

Coastal sage scrub is one of the most threatened plant communities in California. Since 1945, the majority of coastal sage scrub vegetation in California has been lost to urban and agricultural land use (Kirkpatrick and Hutchinson 1980). Only 15% of coastal sage scrub's historic range remains in southern California. This habitat is of the highest priority for preservation (CBI 2001, Davis et al. 1998, NPS 1973).

Desert Scrub

Desert scrub consists of an open, scattered assemblage of broad-leaved shrubs, often with more than 50% bare ground between plants. It is typically found on valley floors at low elevations. Within the study area, desert scrub is found occasionally in the Upper Santa Clara River Area, but is widespread in California deserts farther east (CDFG 2008).

Sagebrush

Sagebrush forms an open scrub community on dry slopes and flats at middle to high elevations. It is typically dominated by big sagebrush (*Artemisia tridentata*), but under certain conditions other species of sagebrush may predominate. In favorable sites, an herbaceous understory may exist, but is often excluded through root competition from the dominant shrubs. Within the study area, sagebrush is found occasionally in the Upper Santa Clara River area but is much more common in the Great Basin floristic province (CDFG 2008).

Woodlands and Forests

Coast Live Oak Woodland

Coast live oak woodlands commonly occur along canyon bottoms that experience at least a seasonal stream flow or in other areas under mesic (wet) conditions, such as on north-facing slopes, erosional plains, and lower slopes in chaparral and coastal sage scrub communities. 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, but can also include significant canyon oak (*Quercus chrysolepis*), particularly on steep, north-facing canyon walls such as in the San Gabriel foothills. Some coast live oak woodlands, such as in the Tujunga Valley and Hansen Dam area, include scattered California black walnut (*Juglans californica*) or valley oak (*Q. lobata*). In higher elevations, coast live oak woodland intergrades with coniferous forest (CDRP 2008). If sufficient groundwater is present, western sycamore (*Platanus rac-*

Vegetation

Rim of the Valley Corridor Special Resource Study

National Park Service
U.S. Department of the Interior

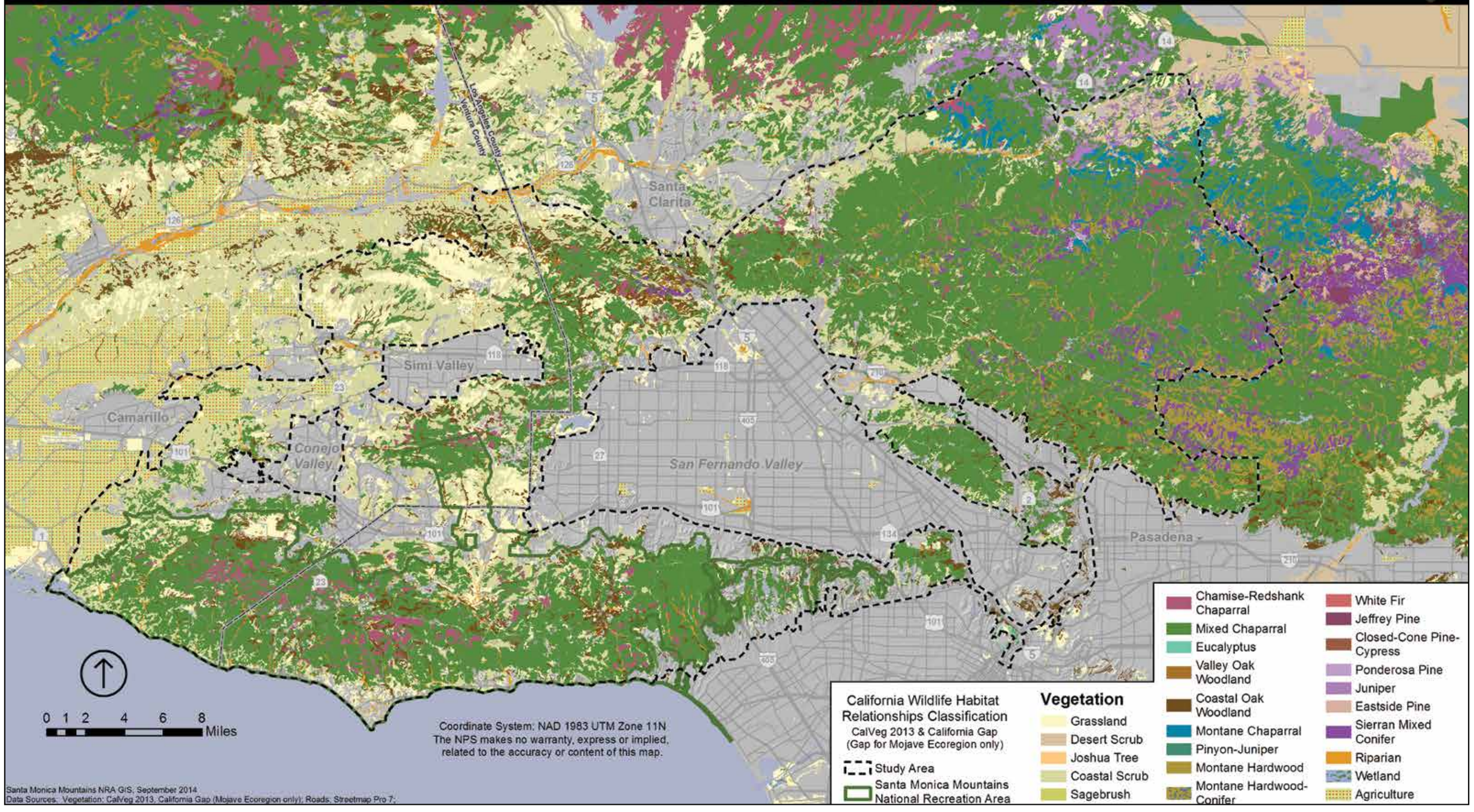


Figure 2-5: Vegetation



Laskey Mesa, in the Simi Hills, contains an unusually large area of native perennial grassland. The endemic San Fernando Valley spineflower, once thought extinct, was rediscovered at Laskey Mesa. Photo: NPS.



The Conejo Canyons area is characterized by a mix of coastal sage scrub and annual grassland. Photo: NPS.



Typical vegetation in the Santa Susana Mountains in the "wedge" between Interstate 5 and Highway 14. Photo: NPS.



The Verdugo Mountains are characterized by steep slopes dominated by chaparral plant communities. Photo: NPS.



The western San Gabriel Mountains are characterized by steep slopes dominated by chaparral vegetation. Photo: NPS.



The slopes of the Santa Monica Mountains include coastal sage scrub and chaparral. Photo: NPS.



The upper Santa Clara River basin includes components of desert scrub and sagebrush vegetation. Photo: NPS.

Examples of Biodiversity: Conejo Mountain Area

The Conejo Mountain area is characterized by at least five examples of sensitive natural communities, including southern riparian scrub, southern willow scrub, thick leaf yerba santa scrub, valley needlegrass grassland, and valley oak woodland.

The volcanic geologic features and soils of this portion of the study area have resulted in the presence of many endemic plant species not found elsewhere. The geologic composition also contributes to the presence of a number of sensitive dudleya plant species.

At the nearby Mount Clef Ridge, rare plants include Lyon's pentachaeta and Conejo buckwheat as well as several other sensitive species associated with the area's volcanic geologic features and soils are found

Sources: Riefner et al. 2004, pers. comm. Edelman 2011, pers. comm. David Magney 2011, pers. comm. Suzanne Goode 2011.

emosa), which is usually associated with riparian habitats, may also occur in the oak woodland. Shrubs such as western blue elderberry (*Sambucus nigra* var. *caerulea*), chaparral currant (*Ribes malvaceum*), skunk bush (*Rhus aromatica*), and California peony (*Paeonia californica*) are frequent in the understory, particularly on slopes, while annual grasses and forbs are often found as understory species in flatter areas(LADRP 2012a). Extensive stands of coast live oak woodland occur at elevations below 2500 feet throughout the study area, primarily in canyons and along waterways.

Valley Oak Woodland (Savanna)

Valley oak woodland forms an open-canopy woodland found on deep, well-drained alluvial soils below 2000 feet. In the study area, this community is almost exclusively dominated by valley oak, sometimes with scattered coast live oaks (*Quercus agrifolia* var. *agrifolia*), with a grassy understory to form a savanna-like community often referred to as valley oak savanna. Los Angeles County includes the southernmost distribution of valley oak in California. Valley oak woodlands are found in scattered patches in the Simi Hills and Santa Susana Mountains within the study area (LADRP 2012a, CDFG 2008).

Montane Hardwood

Montane hardwood occurs at middle to high elevations in the transverse and peninsular ranges. Within the study area, it is found in the San Gabriel Mountains. At higher elevations, formations typically have an overstory of conifers such as pines (*Pinus* spp.), bigcone Douglas-fir (*Pseudotsuga macrocarpa*), incense cedar (*Calocedrus decurrens*), and California black oak (*Quercus kelloggii*). At lower elevations overstory species typically include oaks, white alder (*Alnus rhombifolia*), bigleaf maple (*Acer macrophyllum*), bigcone Douglas-fir, and California bay laurel (*Umbellularia californica*). Understory vegetation usually is dominated by chaparral species. Within the study area, this habitat is found throughout the San Gabriel Mountains (CDFG 2008, Davis et al. 1994).

Montane Hardwood-Conifer

Montane hardwood-conifer includes both hardwood and coniferous trees with very little understory. Dominant species include canyon live oak, Pacific madrone (*Arbutus menziesii*), pines, and incense-cedar. This is a transitional habitat between mixed chaparral, dense coniferous woodlands, montane hardwood, and open woodlands, which provides important forage for birds and mammals. Within the study area, this habitat is found in the San Gabriel Mountains (CDFG 2008, Davis et al. 1994).

Sierran Mixed Conifer

Sierran mixed conifer forests are typically found in the Sierra Nevada. Stands in the San Gabriel Mountains and other areas in southern California are disjunct populations. Dominant species include Douglas-fir, white fir (*Abies concolor*), ponderosa pine, sugar pine (*Pinus lambertiana*), incense cedar, and California black oak. This habitat has a high degree of species richness and is found in the study area at high elevations in the San Gabriel Mountains (CDFG 2008).

Eastside Pine

The eastside pine habitat is typically found in northeastern California and into Oregon, but



Portions of the Simi Hills are characterized by oak savanna where grasses dominate the understory vegetation and oak trees are found in scattered patches. Historically, many oak savanna areas would have had an understory of perennial native grassland, remnants of which are present in the study area.. Photo: Steve Matsuda.



Coast live oak woodland, like this example in the Arroyo Seco, is typically found along canyon bottoms or in other areas under mesic (wet) conditions, such as on north-facing slopes, erosional plains, and lower slopes in chaparral and coastal sage scrub communities. Photo: NPS.



Remnants of riparian habitat in the flood plains of Los Angeles can still be found, such as near the Flint Wash – Arroyo Seco confluence. Photo: NPS.



Big-cone Douglas fir is an ancient relic species found within montane hardwood vegetation in the Santa Susana Mountains. Photo: NPS.



Riparian vegetation forms along waterways and is typically dominated by tree species. This example in the Simi Hills is typical of foothill riparian vegetation. Photo: NPS.

Examples of Biodiversity: Verdugo Mountains

The Verdugo Mountains are essentially an island of nature in the middle of the urbanized metropolitan area. With their rugged terrain, the Verdugo Mountains have remained largely undeveloped and reflects a wide range of natural communities that support abundant wildlife and several sensitive plant and animal species. At least six sensitive natural communities are found in the Verdugo Mountains including bush monkeyflower scrub, California bay forest, California brittlebush scrub, chamise-white sage chaparral, holly leaf cherry chaparral, and white sage scrub.

The geographic location of the Verdugo Mountains makes them important for genetic interchange between otherwise isolated populations. The Verdugo Mountains, as a relatively isolated natural area, also provides a potential ecological stepping stone between the Santa Monica Mountains and the San Gabriel Mountains. Genetic interchange, by way of this linkage is important in perpetuating the genetic variability in isolated populations, and the maintenance of healthy ecosystems. Mountain lions are known to live and successfully reproduce in the Verdugo Mountains.

Source: LADRP 2012a.

a few stands are located in the San Gabriel Mountains within the study area. This habitat is dominated by short to moderate height ponderosa pine, along with some Jeffrey pine, lodgepole pine, white fir, incense-cedar, Douglas-fir, California black oak and western juniper. The understory tends to be open, with low shrubs and a grassy herbaceous layer (CDFG 2008).

Jeffrey Pine

Jeffrey pine forest occurs between subalpine conifer and pinyon-juniper habitat. The dominant species is Jeffrey pine with an understory of scrub oak, various species of ceanothus, Sierra chinquapin, and manzanita. The species richness of Jeffrey pine forest exceeds that of surrounding habitat, since Jeffrey pine seeds, bark, and foliage are important to wildlife. This habitat is found very occasionally in the study area in the San Gabriel Mountains (CDFG 2008, Davis et al. 1994).

Ponderosa Pine

Ponderosa pine (*Pinus ponderosa*) forest includes 50% or more of this species. Shrub layer species include mountain misery (*Chamaebatia foliolosa*), manzanita (*Arctostaphylos* spp.), ceanothus, and Pacific dogwood (*Cornus nuttallii*). This habitat occurs occasionally in the study area at higher elevations in the San Gabriel Mountains (CDFG 2008a, Davis et al. 1994).

Pinyon-Juniper Woodland

Pinyon-juniper woodland consists of a mixture of single leaf pinyon pine (*Pinus monophylla*) and California juniper, forming an open woodland of low, bushy trees with an understory of herbs and large shrubs. This habitat is found in the Upper Santa Clara River watershed and along the northern slopes of the San Gabriel Mountains at middle elevations (LADRP 2012a, CDFG 2008).

Juniper Woodland

Juniper woodlands are dominated by California juniper (*Juniperus californica*), often with an understory of desert scrub species including foothill yucca and buckwheat. Within the study area, juniper woodlands are typically found on northern slopes of the San Gabriel Mountains and lower slopes within the eastern portion of the Upper Santa Clara River watershed (CDFG 2008, Davis et al. 1994).

Joshua Tree

This habitat consists of an open woodland of widely scattered Joshua trees with an understory of shrubs typical of desert scrub habitat. This habitat is found very occasionally in the study area in the easternmost portions of the Upper Santa Clara River valley, but is more common in the Mojave Desert region (CDFG 2008).

Closed-Cone Pine-Cypress

Closed-cone pine-cypress habitat is found scattered among chaparral and hardwood forests. Typically dominated by single species of closed-cone pines or cypress with an understory of chaparral species, this habitat is found in areas with rocky, infertile soils. This habitat is found very occasionally in the study area in the San Gabriel Mountains (CDFG 2008).

Riparian Communities

Riparian communities are found along permanent or nearly permanent waterways, which provide moisture throughout the year. Riparian vegetation stabilizes streambanks, filters water, and often serves as a primary conduit for wildlife movement. Dominant plants often include trees such as California bay, white alder, coast live oak, western sycamore (*Platanus racemosa*) and willow (*Salix* spp.). Riparian forest often includes hydrophytic (water-dependent) plant species in the understory. The study area contains both montane and valley foothill riparian communities. *Valley foothill riparian* habitat occurs along slow-moving waterways on gentle terrain, and possesses a thick impenetrable understory. *Montane riparian* habitat is found at higher elevations, and generally has a more open understory (CDFG 2008, LADRP 2012a).

Wetland Communities

Freshwater Wetlands

Freshwater marsh develops in still or slow-moving freshwater habitats that provide perennially shallow water or saturated soils. This community is dominated by perennial, emergent cattails (*Typha* spp.), which reach a height of four to five meters and often form a closed canopy. Bulrushes (*Schoeneoplectus* spp.) are dominant below the cattail canopy. Deeper water supports submerged plants and a variety of aquatic species. Freshwater marsh

is relatively uncommon, but is among the most productive wildlife habitats in the state.

In addition to perennial freshwater marshes, seasonal wetlands can be found in the study area. Seasonal wetlands dry up during the summer, but become saturated and take on the characteristics of a freshwater wetland during the rainy season.

Vernal pools are a distinctive type of seasonal freshwater wetland which are extremely rare in the area. The nearest verified vernal pools are just outside the study area on the northern rim of the Upper Santa Clara River Valley (at Cruzan Mesa and Plum Canyon). However, there are likely unrecognized ephemeral pools within the study area in suitable soil types. For example, there is at least one small documented seasonal pond with typical vernal pool characteristics in the Golden Valley Ranch portion of the upper Placerita-Sand Canyon watershed on the south side of the Upper Santa Clara River Valley. This small pool is surrounded by coastal sage scrub, with a band of native needlegrass and melic grass (*Melica* spp.) on its fringes. The Golden Valley pool supports vernal pool fairy shrimp, Riverside fairy shrimp and western spadefoot toad (Juhasz 2011, LADRP 2012a).

Salt Marsh

Similar to freshwater marsh, salt marsh requires perennially shallow water or saturated soils, but is subjected to tidal influence and mixing of salt and fresh water. Species associated with this community include cattails, pickleweed (*Salicornia virginica*), and saltgrass (*Distichlis spicata*). Salt marsh occurs along the coast in the study area (LADRP 2012a, CDFG 2008).

Other Types of Vegetation

Agricultural Lands

Agricultural lands in the study area include orchards, irrigated croplands and ranchlands. Most agricultural areas are located on the northern and western edges of the study area, as well as just south of the Conejo Valley (CDFG 2008).

Eucalyptus

Eucalyptus (*Eucalyptus globulus* and other species) are nonnative shrubs or trees originally from Australia, which can occasionally be found in the study area. Eucalyptus often occurs in dense stands near populated areas in valleys and lower elevation foothills. Many stands were planted by humans (CDFG 2008).

Urban

Urban areas occur throughout the San Fernando, Simi, and Conejo Valleys, as well as along the Malibu Coast. The vegetation in these areas is dominated by ornamental plants, largely of exotic origin (CDFG 2008).

Special Status Plants

Within the study area, 74 plant species considered sensitive, rare, threatened or endangered by the U. S. Fish and Wildlife Service (USFWS), the California Department of Fish and Wildlife, or the California Native Plant Society



Riparian vegetation is often found in canyon bottoms, with the sloped areas characterized by shrub-dominated communities such as chaparral and coastal sage scrub. This north-facing side of the Verdugo Mountains illustrates this vegetation pattern which is found in many portions of the study area. Photo: NPS.

Examples of Biodiversity: Upper Santa Clara River

The Santa Clara River has remained largely natural and as such, provides an exceptional example of a natural river system in southern California. Most other rivers in the region have been significantly altered for flood protection or water resource development resulting in the loss of approximately 96% of historic riparian communities. The Upper Santa Clara River is home to more sensitive plant community types (at least seventeen) than any other portion of the study area. In addition to the variety of riparian vegetation types along the Santa Clara River corridors, the tributaries that connect the Santa Clara River to the Santa Susana Mountains and San Gabriel Mountains illustrate some of the unique natural communities of the study area, particularly Riversidian alluvial fan sage scrub.

The Santa Clara River is considered a major biotic corridor, and nearly the entire river system, including the river beyond the study area, is designated by Audubon as a Globally Important Bird Area. This area functions as one of the important habitat linkages in the Los Angeles region, providing a connection between the San Gabriel Mountains and the Sierra Pelona.

Sources: Faber 1989, Santa Clara River Project Steering Committee 1996, LADRP 2012a, Stephenson and Calcarone 1999





Within the study area, 74 plant species are considered to be sensitive, rare, threatened or endangered (LADRP 2000, Cooper 2010, USFWS 2011, CDFG 2012, NASA 2013, Soza et al. in press). Left photo: Verity's dudleya is a narrow endemic found only along a discontinuous 4-mile range of volcanic rock in Ventura County and is designated as federally-threatened. Photo: NPS. Right photo: The San Fernando Valley spineflower was previously believe extinct but was rediscovered in the Simi Hills in 1999 and is now designated as endangered by the State of California. Photo: Anthony Valois.

(CNPS) have been observed (LADRP 2000, Cooper 2010, USFWS 2011, CDFG 2012, NASA 2013, Soza et al. in press). Of these 74 species, 48 are endemic to California, and of those, 40 are endemic only to southern California (*Table D-6: Rare Plants* in *Appendix D*). This count only includes observations recorded in the California Natural Diversity Database[3] and published plant surveys. Since the study area is large and varied, and no comprehensive biological surveys have been conducted for all areas of the study area, it is likely that other special status plants occur in appropriate habitat.

Twelve plant species considered federally threatened or endangered have been recorded in the study area. Six of these are federally endangered (FE), five are federally threatened (FT) species, and one is a candidate species (C) for which the USFWS has on file sufficient information on the biological vulnerability and threats to support proposals to list as endangered or threatened (USFWS 2011a, CDFG 2012).

- Braunton's milk vetch (*Astragalus brauntonii*), FE
- California Orcutt grass (*Orcuttia californica*), FE
- Lyon's pentachaeta (*Pentachaeta lyonii*), FE
- Nevin's barberry (*Berberis nevinii*), FE
- Salt marsh bird's beak (*Chloropyron maritimum* ssp. *maritimum*), FE
- Slender-horned spineflower (*Dodecahema leptoceras*), FE
- Santa Monica Mountains dudleya (*Dudleya cymosa* ssp. *ovatifolia*), FT
- Agoura Hills dudleya (*Dudleya cymosa* ssp. *agourensis*), FT
- Conejo dudleya (*Dudleya parva*), FT
- Marcescent dudleya (*Dudleya cymosa* ssp. *marcescens*), FT
- Verity's dudleya (*Dudleya verity*), FT
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), C

The life history, habitat, status, and threats to these threatened and endangered plants are described in *Appendix D*. Observed locations and designated critical habitat for these species are shown in *Figure 2-6: Designated Critical Habitat,* and *Figure 2-7: Federally listed Threatened and Endangered Species*.

Wildlife

The study area supports a diverse, abundant wildlife community, reflecting the range of vegetation and habitat types available. The complex, interconnected mosaic of vegetation types in the study area provides rich habitat for wildlife, many species of which use more than one community type in their daily activi-

[3] The California Natural Diversity Database is maintained by the California Department of Fish and Wildlife, with input from scientists and other partners, to provide current information on rare and imperiled plants, animals, and communities.

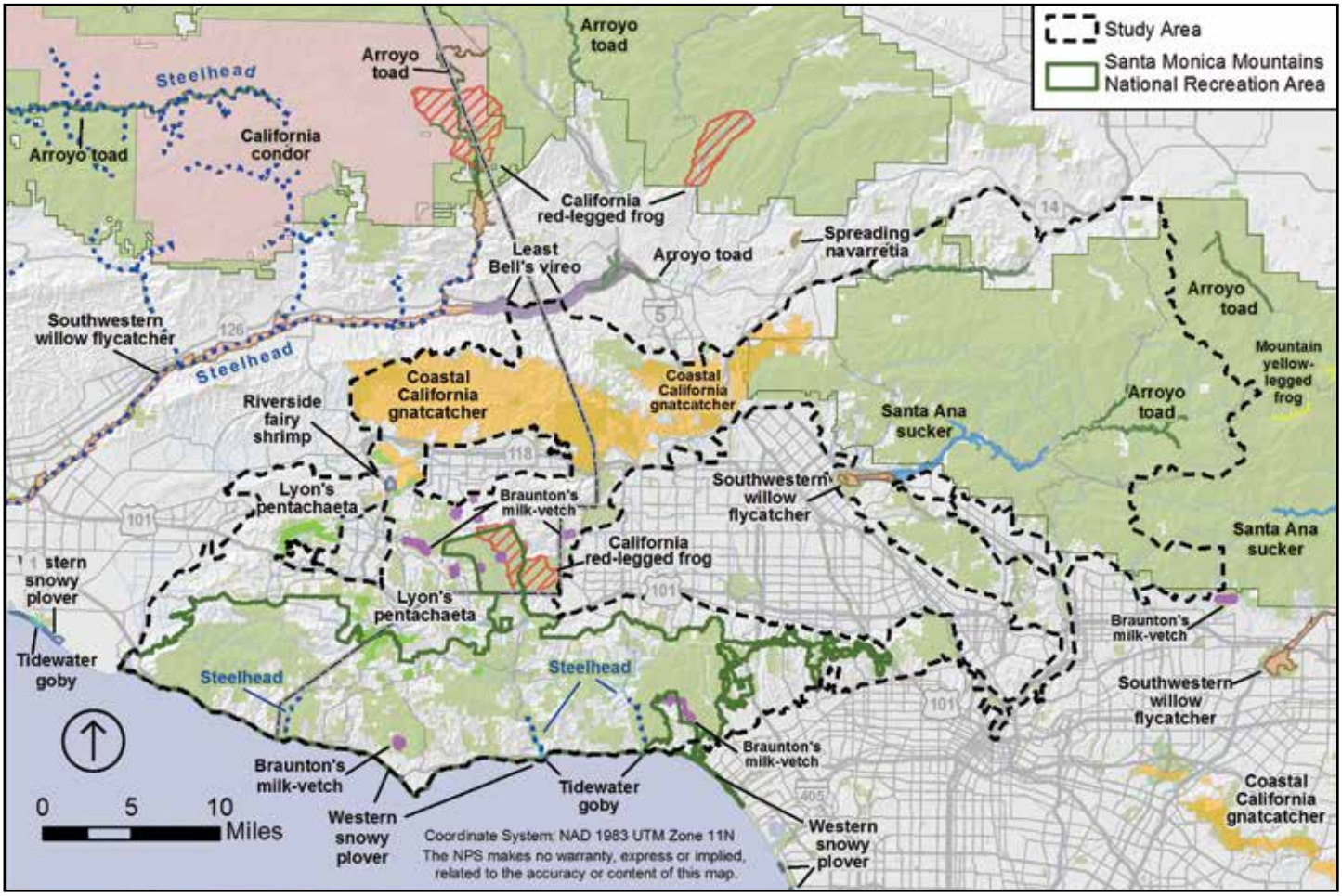


Figure 2-6: Designated Critical Habitat

ties. Many of the animal species endemic to Mediterranean habitats also rely on different communities seasonally or during different life cycle stages (NPS 2002, California Coastal Commission 2003, LADRP 2012a).

A wide variety of mammals are known to inhabit and use the study area. Mammalian diversity is influenced by habitat type and species sensitivity to human disturbance. Smaller, isolated patches of undeveloped habitat or areas close to housing or those used more heavily for recreation are primarily home to species tolerant of human disturbance. Species such as coyotes, raccoons, bobcats, skunks, deer mice, rabbits, and hares are often found in these areas, though these species also use and often prefer larger, more natural habitat areas. A variety of bats are also known to inhabit the study area. Large, wide-ranging mammals, such as black bears and mountain lions tend to spend more time farther from human development, but mountain lions are known to use most of the study area for foraging and dispersal. The presence of relatively stable populations of large carnivores (black bears and mountain lions) indicates that the food web in the study area is intact and resilient at all trophic levels (NPS 2002, Ventura County 2011, LADPW 2012, USACOE 2013).

The bird community in the study area is remarkably diverse due to the wide variety of coastal sage scrub, chaparral, forest, oak woodland and savanna, riparian, and grassland habitats which provide both forage and cover for year-round residents and migrants. Vegetation types are often interspersed, providing ideal opportunities for birds that require different habitats for foraging, nesting, and roosting. Many species of songbirds, waterfowl, and raptors are found in the study area. In addition, the southern edge of the study area, along the coast, is part of the Pacific Flyway, a major global migration route for birds (NPS 2002, LADPW 2012, USACOE 2013).

The study area supports robust populations of a variety of lizard and snake species. Preferred reptile habitat, in the form of open areas and rock outcrops for visibility and small mammal

Examples of Biodiversity: Santa Susana Mountains

The Santa Susana Mountains contain a variety of biological resources due in part to the convergence of coastal, montane and desert influences. The rare communities of the Santa Susana Mountains help to illustrate the distribution and evolution of flora, including plant species that are either ancient relics or have their northernmost or southernmost ranges in this area. For example, the uncommon Palmer's oak (*Quercus palmeri*), a desert species that can be very long lived, is found here. On the northfacing side of the mountains is the northwesternmost example of a Pleistocene/ Ice Age relic forest of bigcone Douglas-fir.

Also significant is the high diversity of oak woodlands documented in the Santa Susana Mountains including valley oak, coast live oak, interior live oak, and canyon live oak. Outstanding examples of valley oak savanna, a now-rare habitat type which was once emblematic of the Santa Clarita and San Fernando Valleys, are found on the north side of the mountains. Large areas of California black walnut woodlands include some of the most unusual mixed evergreen and hardwood forests in southern California.

Sources: pers. comm. Betsy Landis 2011, LADRP 2012a, pers. comm. David Magney 2011, pers. comm. Suzanne Goode 2011, Mullally 1992)

burrows for cover, is abundant throughout the study area. Southwestern pond turtles are also found in a number of places with permanent water (LADPW 2012, USACOE 2013).

Amphibians tend to be restricted to moister areas such as canyon bottoms, riparian areas, and surface water sources. A variety of native frogs, toads, and salamanders are found throughout the study area. Two nonnative amphibians, American bullfrog (*Lithobates catesbeinus*) and African clawed frog (*Xenopus laevis*), are widespread in the study area (NPS 2002, LADPW 2012, USACOE 2013). The American bullfrog is a known competitor and predator of the federally threatened California red-legged frog and other native species, and the African clawed frog may be responsible for the introduction of the virulent fungus *Batrachochytrium dendrobatidis* (chytrid) to California (Stebbins and McGinnis 2012).

The Los Angeles basin was once home to at least seven native species of freshwater fishes that have been declining or have been extirpated since the 1930s: the Southern California Distinct Population Segment of steelhead (*Oncorhynchus mykiss*), unarmored threespine stickleback, Santa Ana sucker (*Catostomus santaanae*), arroyo chub (*Gila orcuttii*), Pacific lamprey (*Lampetra tridentata*), Pacific brook lamprey (*Lampetra pacifica*) and Santa Ana speckled dace (*Rhinichthys osculus*) (USACOE 2013). Steelhead, Pacific lamprey, Pacific brook lamprey, and the unarmored threespine stickleback have been extirpated from the Los Angeles basin since the 1950s but are still found in other portions of the study area (Swift et al. 1993, USFWS 2004). Two fish surveys of the Los Angeles River in 2004 and 2007 did not find any native fish. The most common nonnative fish identified were mosquitofish (*Gambusia affinis*), green sunfish (*Lepomis cyanellus*), and tilapia (*Oreochromis* spp.) (USACOE 2013). However, the Santa Ana speckled dace, the arroyo chub, and the Santa Ana sucker are found in some Los Angeles River tributaries (Swift et al. 1993, USFWS 2004, The River Project 2006).

Waterways in SMMNRA host spawning populations of steelhead and Pacific lamprey (NPS 2002). The Santa Clara River also supports important habitat for native fish including steelhead, unarmored three-spine stickleback, tidewater goby, Santa Ana sucker, and arroyo chub (LADPW 2005). A number of marine species are known to use the beaches and lagoons of the SMMNRA coast, including a spawning population of California grunion (*Leuresthes tenuis*) (NPS 2002). Many nonnative fish have been introduced to the waterways of the study area, particularly those with recreational fishing value (LADRP 2012a).

Invertebrate surveys in the study area have been focused in relatively small areas and often on limited suites of species. However, these surveys have indicated that the diversity and abundance of both terrestrial and aquatic invertebrates in the study area is quite large, and numerous rare, imperiled, and endemic species are present (*Table D-7: Rare Animals* in *Appendix D*)(Stoms et al. 2012, pers. comm. David Magney 2011, Sikich et al. n.d.). The highly invasive nonnative New Zealand mudsnail (*Potamopyrgus antipodarum*) has also been detected in at least eight streams in the Santa Monica Mountains (Sikich et al. n.d.).

Special Status Wildlife

A high concentration of sensitive wildlife is present in the study area: 51 animal species considered sensitive, rare, threatened or endangered by the U.S. Fish and Wildlife Service (USFWS), the California Department of Fish and Wildlife, and the USFS have been observed (*Table D-7: Rare Animals* in *Appendix D*). This count only includes observations recorded in CNDDB and published biological surveys. Since the study area is large and varied, and no comprehensive biological surveys have been conducted, it is likely that other special status animals occur in the study area in appropriate habitat.

Seventeen animals considered federally threatened or endangered have been recorded in the study area. Ten of these are federally endangered (FE), six are federally threatened (FT) species, and one is a candidate species (C) for which the USFWS has on file sufficient information on the biological vulnerability and threats to support proposals to list as endangered or threatened (USFWS 2011a).

- Arroyo toad (*Bufo californicus*), FE
- Mountain yellow-legged frog (*Rana muscosa*), FE
- California red-legged frog (*Rana draytonii*), FT

Federally-Listed Threatened and Endangered Species

Rim of the Valley Corridor Special Resource Study

National Park Service
U.S. Department of the Interior

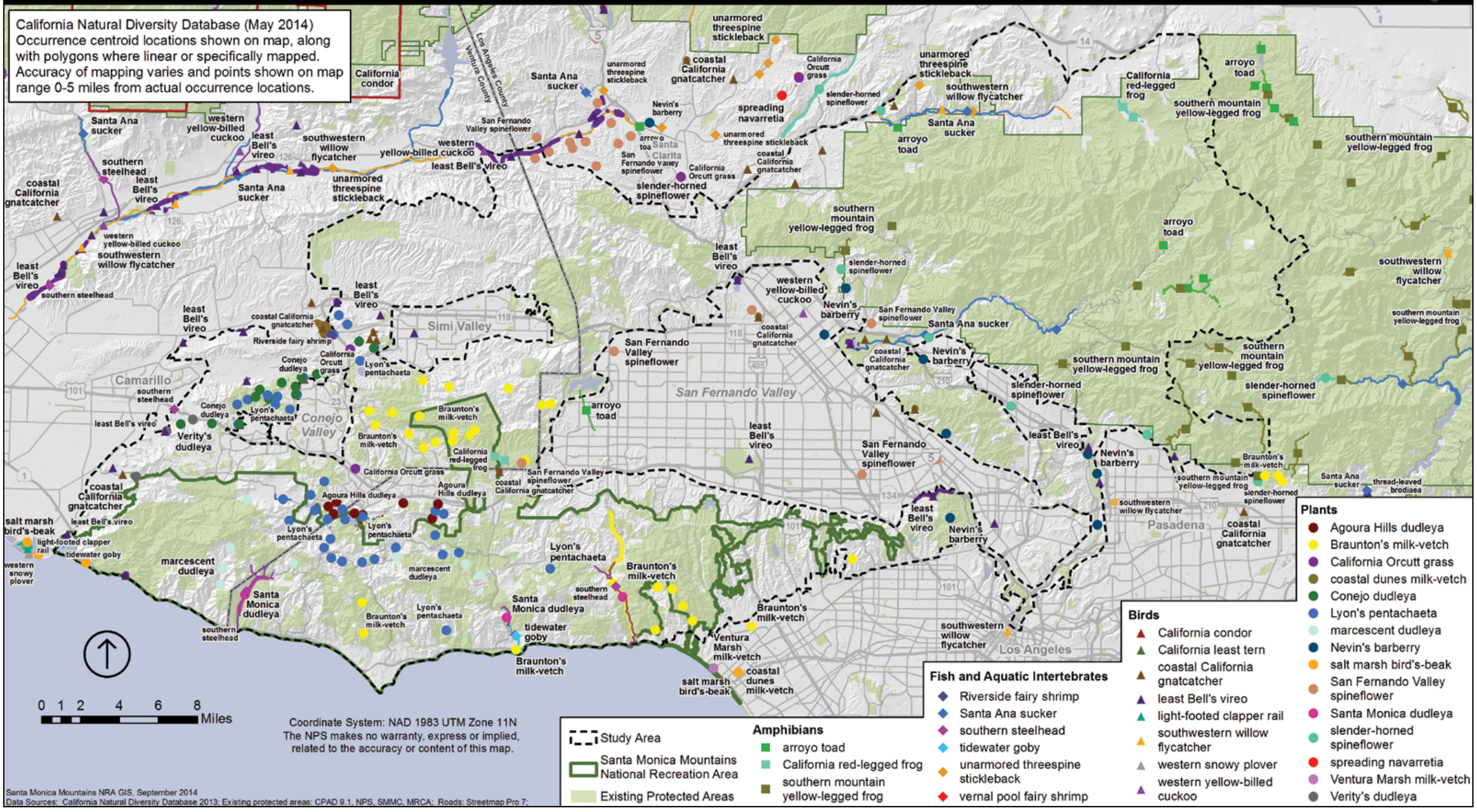


Figure 2-7: Federally-Listed Threatened and Endangered Species









Several animal species considered sensitive, rare, threatened or endangered are found in the study area, including (from top to bottom) California condor, least Bell's vireo, arroyo toad, and southern steelhead. Photos (top to bottom): Gary Kramer/ USFWS, B. Moose Peterson/USFWS, USFWS, NOAA.

- California condor (*Gymnogyps californicus*), FT
- Coastal California gnatcatcher (*Polioptila californica californica*), FT
- California least tern (*Sterna antillarum browni*), FE
- Southwestern willow flycatcher (*Empidonax trailii extimus*), FE
- Least Bell's vireo (*Vireo bellii pusillus*), FE
- Light-footed clapper rail (*Rallus longirostris levipes*), FE
- Western snowy plover (*Charadrius alexandrinus nivosus*), FT
- Western yellow-billed cuckoo (*Coccyzus americanus*), C
- Southern steelhead (*Oncorhynchus mykiss*), FE
- Tidewater goby (*Eucyclogobius newberryi*), FE
- Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), FE
- Santa Ana sucker (*Catostomuss antaanae*), FT
- Riverside fairy shrimp (*Streptocephalus woottoni*), FE
- Vernal pool fairy shrimp (*Branchinecta lynchi*), FT

The life history, habitat, status, and threats to these threatened and endangered animals are described in *Appendix D*. Observed locations and designated critical habitat for these species are shown in *Figure 2-6: Designated Critical Habitat,* and *Figure 2-7: Federally listed Threatened and Endangered Species*.

Wildlife Corridors

The South Coast Ecoregion is simultaneously one of the most biodiverse areas in the country, the second most populous area in the U.S., and the most populated area in California, making it the most threatened hotspot of biodiversity in the continental United States (Spencer et al. 2010). Considerable wildlife habitat remains, mostly in rugged mountains, but is often separated by roads or densely urbanized or agricultural lands on gentler terrain (Spencer et al. 2010, South Coast Wildlands 2008). When plant and animal populations are isolated through habitat fragmentation, consequences can be severe, including reduced populations, increased susceptibility to environmental change, potential genetic deterioration, and even extirpation from formerly occupied habitats. The situation is especially serious for larger animals, including mountain lions, which require larger home ranges (NPS 2002, Riley et al. 2014).

Offsetting habitat fragmentation requires protecting connections between existing areas of natural habitat to form a regional wildland network. Existing open space habitat areas, sometimes referred to as nodes or reserves, are connected by corridors, which may be narrow or comprised of less ideal habitat than the nodes themselves. When existing natural habitats are connected, plants and animals are able to move between them, allowing natural ecological processes to occur (such as finding food and mates, migration, interbreeding between populations, recolonization of unoccupied habitat, and potentially responding to climate change with range shifts). It is generally preferable to maintain connections where they exist, although it may be necessary to construct or improve corridors in some situations (Stoms et al. 2012, USACOE 2013, LADRP 2012a, South Coast Wildlands 2008).



California red-legged frog has been the focus of a reintroduction effort in Santa Monica Mountains National Recreation Area. Photo: NPS

Examples of Biodiversity: Griffith Park

Griffith Park, the largest park in the City of Los Angeles, is located at the eastern terminus of the Santa Monica Mountains (outside of SMMNRA) and consists of an extensive, relatively undisturbed natural island in an urbanized area. Though isolated, this area is important for preserving and documenting the geographic variability of plants and animals that formerly occurred throughout the region.

The park contains many sensitive natural communities including California bay forest, California brittle brush scrub, California sycamore woodlands, and holly leaf cherry chaparral. The northern part of the park includes coastal sage scrub and valley needlegrass grassland. Riparian forest ravines are easily seen along Griffith Park Drive. Oak woodlands along drainages transition into chaparral and grassland on the uppermost slopes. North-facing rocky outcrops in the park often have cliffside vegetation of lichens, mosses, liverworts and along with live-forever (*Dudleya* spp.), and other flowering plants.

Birds rely on these open space islands to rest and feed as they migrate. Griffith Park also serves as a corridor for species movement that may take place between the Santa Monica and San Gabriel mountains via the Verdugo Mountains.

Sources: LADRP 2012a.





Left photo: Rocky Peak Park stretches from the 118 freeway five miles north to Las Llajas Canyon and forms a critical wildlife habitat linkage between the Simi Hills and the Santa Susana Mountains. Right photo: NPS has been conducting ongoing studies of mountain lion movement in and around SMMNRA. Photos: NPS.

Although habitat linkages and corridors are key to wildlife movement, to be most effective, they must connect large, contiguous blocks of protected open space. Without the core habitats that include sufficient areas for foraging and breeding, the ability to maintain healthy populations is reduced. Evaluation of connectivity needs and potential linkage areas requires identifying which core areas the linkage would serve and which species would utilize and benefit from the connection(s). The required characteristics of a corridor (such as cover, visibility, and corridor width) will vary by species. Although some habitat linkages and wildlife movement corridors may be useful for some species they may be less valuable or important for others. Roadways are often the primary interruption to otherwise intact corridors, because they often divide otherwise undeveloped land. Some species may use under or overpasses, or attempt to cross the road itself, but others may be stuck on one side (NPS 2002). River corridors naturally serve as important wildlife corridors in much of the southwestern U.S. because they provide cover, water, and food not found in much of the surrounding upland habitat (USACOE 2013).

The South Coast Ecoregion has probably undergone more connectivity and conservation planning than many other regions in the country, due to its uniquely high levels of both biodiversity and human development (Spencer et al. 2010). Despite the development of significant portions of habitat, the remaining habitat reserves of the South Coast Ecoregion are substantial and remain a fundamentally interconnected system (South Coast Wildlands 2008). In and near the study area, major habitat blocks remain in the San Gabriel Mountains, the Sierra Pelona (Angeles National Forest north of the San Gabriel Mountains), the Topatopa Mountains (Los Padres National Forest), and, to a lesser extent, the Santa Monica Mountains. The effects of fragmentation in the region have been intensively studied over the past few decades, and multiple attempts at collaborative habitat connectivity planning have taken place at varying scales.

The most thorough and specific planning effort has been the South Coast Missing Linkages (SCML) project, which developed 15 detailed, feasible linkage designs representing a network connecting the entire region – from the southern Sierras to the coast to the Mojave and Sonoran deserts (*Figure 2-8: Habitat Linkages*). The SCML used a collaborative process, with involvement from local, state, and federal agencies (including the NPS), non-profit organizations, and academic scientists, to determine likely corridors between major protected areas by considering landscape permeability to selected focal species. The project identified a total over 50 missing linkages. The 15 corridor designs represent the highest priority linkages which must be maintained if the incredible biodiversity of the South Coast Ecoregion is going to be preserved. Corridors associated with the study area include two primary branches connecting the Santa Monica, Santa Susana and Sierra Madre mountains (via the Topatopa Mountains in the Los Padres National Forest) around the edges of Simi Valley. Another primary corridor links the San Gabriel Mountains to the Sierra Pelona to the north (both parts of the Angeles National Forest) across the Upper Santa Clara River valley. Outside of the high priority linkage designs, additional important corridors were identified

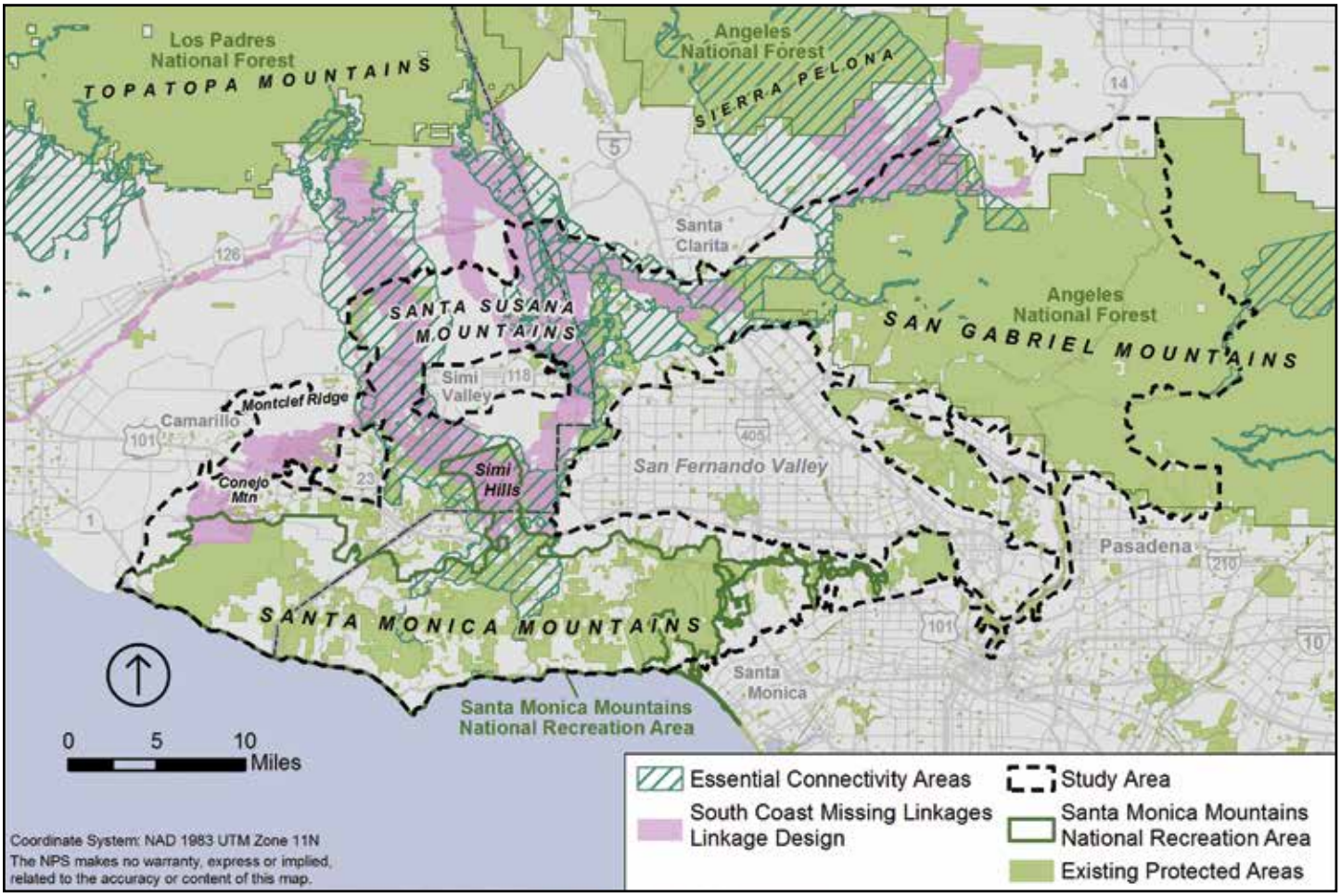


Figure 2-8: Habitat Linkages

that connect the Santa Susana Mountains to the San Gabriel Mountains, and another that connects the western Santa Monica Mountains to the Santa Susana Mountains via the Conejo Mountain / Mount Clef Ridge area (Penrod et al. 2006).

The California Essential Habitat Connectivity (CEHC) project was prepared by the California Department of Transportation and the California Department of Fish and Game to identify habitat linkages at a state-wide scale. The CEHC used a similar collaborative process to the SCML, but at a broader scale. Rather than building linkages based on the needs of focal species, it used a GIS based landscape analysis to connect 850 Natural Landscape Blocks (open-space and protected areas) throughout the state of California using 192 Essential Connectivity Areas (corridors). In the southern California region, the corridors identified by the CEHC have more than an 80% overlap with those identified by SCML. Corridors associated with the study area include a pair of corridors linking the Santa Monica to the Santa Susana to the Topatopa Mountains, a corridor linking the Santa Susana and San Gabriel Mountains, and a corridor linking the San Gabriel Mountains to the Sierra Pelona (Spencer et al. 2010). These corridors are very similar to the corridors identified by SCML.

Smaller-scale studies focused on maintaining connectivity to particular protected areas have also identified corridors similar to those in SCML and CEHC. For example, Los Angeles County has identified a set of significant ecological areas, which support valuable habitat for plants and animals. To maintain high levels of connectivity between core habitat areas, Los Angeles County has also identified networks of linkages and corridors for each SEA (LADRP 2012a). Santa Monica Mountains National Recreation Area has also identified connections to the Simi Hills and onwards to the Santa Susana, Sierra Madre, and San Gabriel Mountains as necessary to ensure the survival of large mammals in the recreation area (NPS 2002). The Santa Monica Mountains Con-

Examples of Biodiversity: Simi Hills

The biodiversity of the Simi Hills includes resources not found in neighboring mountains. Uplifted marine sediments form intermixed sandstone and carbonate beds resulting in soils supporting unique patterns of sensitive vegetation that contribute to a diverse ecological mosaic. Laskey Mesa in the Upper Las Virgenes Open Space Preserve represents one of the most outstanding examples of native grasslands in southern California. Before it was rediscovered at Laskey Mesa in 1999, the endemic San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) was presumed extinct.

Ponds and seasonally wet areas in the Simi Hills support a diversity of rare species, including grasses and invertebrates more commonly associated with vernal pools and the southernmost population of the federally threatened California red-legged frogs (*Rana draytonii*). Surveys performed by NPS biologists have also found several rare amphibian and reptile species, including western spadefoot toad (*Scaphiopus hammondii*) and legless lizards (*Anniella pulchra*). The Chatsworth Reservoir area provides habitat for pond turtle, western spadefoot toad, as well as a variety of bird species.

Sources: LADRP 2012a, pers. comm. Suzanne Goode 2011, pers. comm. David Magney 2011, CNDDB 2011, pers. comm. Paul Edelman 2011

servancy comprehensive plan identified important corridors between the Simi Hills and Santa Susana Mountains, the Santa Monica Mountains and the Simi Hills, and between the Santa Monica and Santa Susana mountains via Montclef Ridge (Stoms et al. 2012). All of these corridors generally corroborate the corridors mapped by SCML and CEHC.

These key corridors are currently relatively undeveloped, but large portions consist of unprotected land in private ownership. Development or another use could block or eliminate these corridors and cause irreparable damage to animal movement in the South Coast ecosystem.

An additional corridor through a heavily urban area could also be achieved by the proposed restoration of the Los Angeles River and its tributaries, including Arroyo Seco. If restored, these riparian corridors would link the Santa Monica Mountains to the San Gabriel and Verdugo mountains. This corridor would provide a narrow linkage which could benefit species tolerant of nearby human development. In addition, even a partially restored river could provide a linkage for bird species which have the ability to fly between patches of suitable habitat (USACOE 2013). Although a corridor this narrow is unlikely to provide any benefit to large mammals, it could provide a linkage for populations of smaller species in the Santa Monica and San Gabriel mountains.

Fire History and Regime

The Mediterranean climate of southern California is dominated by shrubland vegetation types. These widespread and continuous stands of shrubs create "perfect fuels," much like the kindling in a campfire. There is an annual fire season in the fall as the vegetation dries out at the end of summer and hot, dry Santa Ana winds from the north or northeast become more frequent. Major wildfires often occur when a fire ignites in conjuntion with Santa Ana winds and low fuel moisture resulting from seasonal drought. High winds, heat, dry vegetation and terrain combine to facilitate rapidly moving, intense flames. Most of the study area has burned in large wildfires under these conditions. Chaparral fires consume most of the above ground vegetation and leave burned areas susceptible to postfire flooding and debris flows. Fires throughout the study area and southern California as a whole have a long history of causing major property damage and loss (*Figure 2-9: Fire Frequency*).

The conditions that lead to large wildfires are not a new phenomenon in southern California. The global circulation patterns that cause the Mediterranean climate and Santa Ana wind patterns have existed for millions of years. There have been many changes in vegetation and temperature patterns as ice ages have come and gone during that time, but Santa Ana winds and the Mediterranean climate with dry summers and moist winters have occurred for at least the past 5 – 10 million years (Axelrod 1973).

Large fires driven by Santa Ana winds have occurred in southern California as far back as there is evidence to assess. Analysis of charcoal in sediment cores collected in the Santa Barbara Channel suggest that large weather-driven fires have occurred more or less regularly throughout the last 600 years. Large wind-driven fires occurred through the Chumash Indian times, the Spanish, Mexican, and American ranching periods, and modern times. The fact that large fires continued to occur steadily through different historic periods with very different approaches to fire suppression suggests that the incidence of large fires is primarily determined by fire weather, and that it is a process substantially unaffected by modern attempts at fire suppression (Mensing, Michaelsen and Byrne 1999).

Recent fire regimes in the study area appear to be affected by several influences. These include increases in human-caused ignitions from increased vehicle traffic and human use, increased invasions of nonnative species that grow quickly and burn easily, other anthropogenic disturbances, and changing weather patterns (especially drought) associated with regional and global climate change.

Fire cycle

Southern California shrublands are adapted to a fire regime of infrequent, intense, stand-replacing crown fires that usually occur in the fall. These fires are often reported in the press to have "destroyed" thousands of acres of wildlands. However, native shrublands are

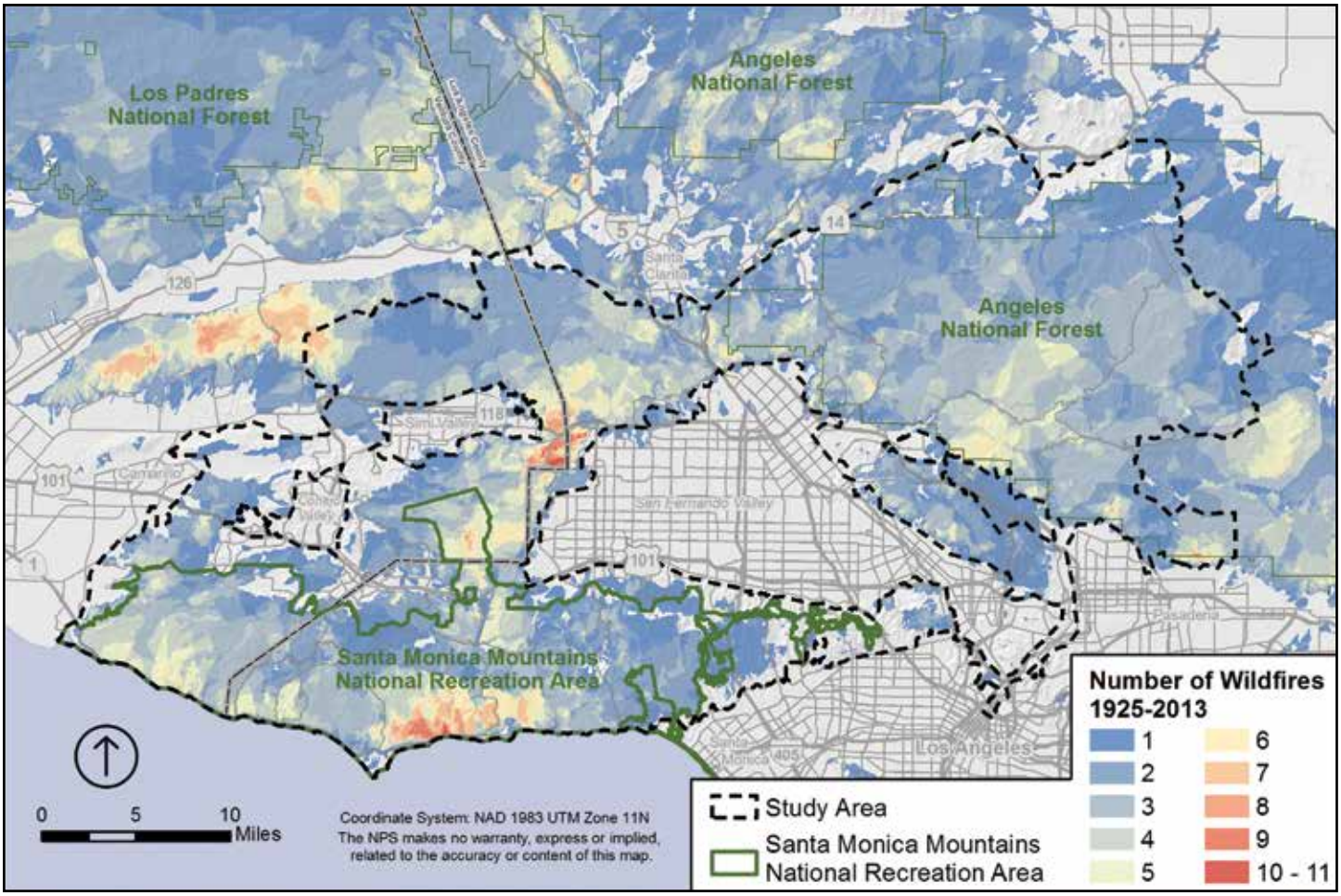


Figure 2-9: Fire Frequency

Southern California shrublands are adapted to a fire regime of infrequent, intense, stand-replacing crown fires that usually occur in the fall.

resilient to infrequent fires and have numerous traits that allow them to recover quickly. Often, even before any rain has fallen, the slopes become green as fire-tolerant shrubs respout from their root-crowns. With sufficient rainfall in the first spring following a fire, there is striking vegetation recovery on barren, blackened hillsides. New growth comes from resprouting shrubs and herbaceous perennials, germinating shrub seedlings, and an abundance of native annuals. Within about 10 years at coastal sites and 20 years at inland sites, the canopy of the dominant shrubs begins to close and short-lived fire-following annuals and perennials disappear and are present only in the soil seed bank.

Although chaparral and coastal sage scrub are fire adapted vegetation types, they are not fire-dependent ecosystems. Although a few chaparral species depend on fire to reproduce, such as the non-sprouting shrub species like bigpod ceanothus (*Ceanothus megacarpus*) and big-berry manzanita (*Arctostaphylos glauca*), most chaparral species resprout from underground parts and actually recruit in the intervals between fires. The term "fire-dependent ecosystem" is often used to imply a management need to provide fire that is absent in an ecosystem, however southern California is certainly not lacking in wildfire.

Fire Frequency and Ecosystem Threats from Wildfire

Scientists believe that fire intervals of less than 20 years may threaten the biodiversity of chaparral and coastal sage scrub (Keeley and Davis 2007). Although fire is part of the natural ecology of the study area, only the upper elevations of the San Gabriel Mountains have a history of natural lightning-caused fires. Over the last century, human activities have caused fire to occur much more frequently than it did historically. The estimated natural fire return interval for the chaparral types typical of this region is approximately 70-100 years (Safford and Van de Water 2013). However, the average amount of time between fires within the study area is currently far shorter than the natural fire return interval throughout most

The ecological threats related to fire in the study area are not from an insufficient amount of fire required in a fire-dependent ecosystem, but from fire occurring at such a high frequency that it exceeds the ability of the ecosystem to recover normally.



The 2009 Station Fire burned over 160,000 acres of the western San Gabriel Mountains and threatened foothill communities such as Altadena, La Canada Flintridge, La Crescenta, and Tujunga, and key facilities and infrastructure such as NASA's Jet Propulsion Laboratory. Photo: Merrilee Fellows/NASA.

of the 20th century. Analysis of fire history from 1925 through 2013 reveals average return intervals of 28-44 years for the study area, with Simi Hills having the shortest average return rate (28 years) and the Verdugo Mountains/ San Rafael having the longest average return rate (46 years) (NPS 2013c, CDF 2012, NPS 2014). Within the study area, the western Santa Susana Mountains, the Simi Hills, the ocean facing canyons of the Santa Monica Mountains above Malibu, and the foothills of the San Gabriel Mountains are especially prone to very short fire return intervals (too frequent fire).

The ecological threats related to fire in the study area are not from an insufficient amount of fire required in a fire-dependent ecosystem, but from fire occurring at such a high frequency that it exceeds the ability of the ecosystem to recover normally. When recovery is threatened by too-frequent fire, an area dominated by shrubs may be converted to nonnative grassland. This process of change from a native shrubland to nonnative grassland is known as type conversion. Type conversion leads not only to the loss of shrubs, but also to elimination of the native annuals that contribute to the rich species diversity of the postfire flora.

Climate change, fire and drought

Southern California is expected to experience among the most extreme shifts in climate in the United States in the 21st century. This is not just because of the absolute magnitude of temperature changes, but because of the enormous increase in variability expected in the climate system with increased severity and frequency of drought and increased severity of flooding.

When a drought year follows a fire, then vegetation recovery is at risk from drought-induced mortality. Increased drought frequency from climate change, combined with a high fire frequency, increases the probability of fire and drought coinciding and the potential for large shifts in plant community composition.

Additionally, large fires are more likely to occur during and after droughts (Davis and Michaelsen 1995). Fire-climate modeling predicts that relatively small increases in frequency and duration of droughts produce substantial increases in area burned by wildfires. Current future climate forecasts for southern California predict that rainfall will become more variable, with more droughts and more floods. Scientists expect the current Mediterranean-type fire regime to continue for the foreseeable future, but with increased potential for wildfires, especially in spring and summer, as the number and duration of droughts increase. As temperatures rise and drought increases, live fuel moisture will be at lower levels earlier in the year and for longer periods of time, potentially extending the length of the fire season (Dennison and Moritz 2009).

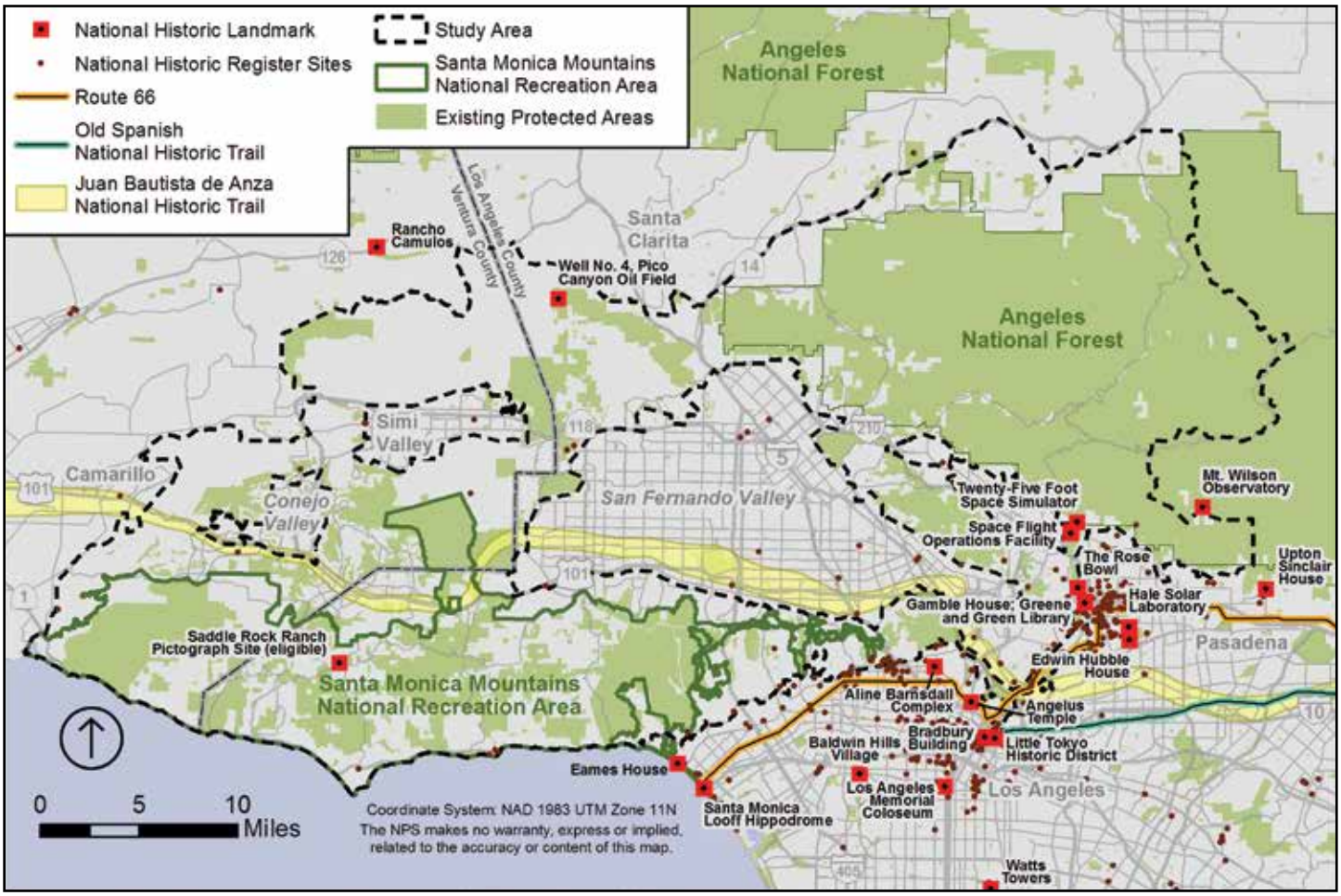


Figure 2-10: Cultural Resources

Cultural Resources

Introduction

The Rim of the Valley Corridor study area's rich history embraces the settlement of Native Americans, Spanish missionaries and colonialists, Mexican rancheros, and the wide range of cultures that reside in the area today. Cultural resources within the study area also depict the settlement and growth of southern California, a uniquely American story. A semiarid region facing an ocean, both encircled and bisected by mountains of the Transverse Range Province, the Los Angeles region would appear to be a difficult location for significant urban growth and settlement. Facilitated by innovations in engineering and infrastructure, Los Angeles transformed from an isolated settlement in 1781 to the second largest metropolitan area in the United States by the end of the 20th century (Kaplan 1987).

The study area contains an impressive collection of cultural resources of varying degrees of significance—from local landmarks to national historic landmarks. Resources include archeological resources, ethnographic resources, historic structures, cultural landscapes, and national historic trails (*Figure 2-10: Cultural Resources*).

Archeological resources are the physical evidence of past human activity, including the effects of these activities on the natural environment. Archeological resources are frequently conceptualized and managed as spatially discrete archeological sites. Sites are frequently clustered into larger units that can be defined as archeological districts, and sometimes archeological resources are obscured by vegetation or post-occupational soil deposition, or simply are too sparse to warrant site status. Ethnographic resources are basic expressions of human culture that are the basis for continuity of cultural systems. Ethnographic resources encompass both the tangible and the intangible, and include traditional arts and native languages, beliefs, and subsistence activities, as well as artifacts that were made and/or used by traditional groups and collected directly from them rather than recovered from archeological context.

Facilitated by innovations in engineering and infrastructure, Los Angeles transformed from an isolated settlement in 1781 to the second largest metropolitan area in the United States by the end of the 20th century (Kaplan 1987).

Structures are constructed works built to serve some human activity and are usually immobile. They can be of either prehistoric or historic age. Examples include buildings and monuments, trails, roads, dams, canals, fences, and structural ruins. Broadly defined, cultural landscapes reflect human adaptation, use of natural resources, and modification of the area through various land-use practices. Cultural landscapes are often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, the types of structures that are present, and the layout of structures with respect to other features of the physical and built environment. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by uses that reflect cultural values and traditions.

The following section identifies and describes the historic context and associated resources for the study area. *Tables D-8* through *D-11* in *Appendix D* summarize historic properties and archeological resources (organized by historic context) within the study area, including those properties listed, or determined eligible for listing, in the National Register of Historic Places, national historic landmarks, national historic trails, and California state landmarks. The NPS used existing resources from a wide range of sources to compile these resources for the study area. These resources include:

- National Register of Historic Places (NRHP) nomination forms
- California Historical Landmark Register
- Cultural resource records provided by the South Central Coastal Information Center at California State University, Fullerton, in June 2011
- Properties determined eligible for listing in the NRHP through Survey L.A. (comprehensive historic surveys conducted by the City of Los Angeles)
- Sites identified in, "Five Views Survey: An Ethnic Historic Site Survey," conducted by California Department of Recreation and Parks, State Historic Preservation Office
- Individual studies where available
- NPS archeological records and data for Santa Monica Mountains National Recreation Area

Historic sites on local historic registers have not been included because the numbers are quite numerous for the study area. However, it should be noted that such properties also contribute to the rich cultural history of the study area. Associated resource tables in *Appendix D* also include the geographic subregion(s) in which the property is located, and the associated theme represented by the site. The NPS uses the *National Park Service Thematic Framework* to organize historic properties by major themes that help to conceptualize American history. The framework is used to assist in the identification of cultural resources that embody America's past and to describe and analyze the multiple layers of history represented by each resource. Through eight concepts that encompass the multi-faceted and interrelated nature of human experience, the thematic framework reflects an interdisciplinary, less compartmentalized approach to American history. *Appendix F* includes a description of the thematic framework.

Geographic Scope

The geographic scope of the cultural resource description primarily corresponds to the 650,000-acre study area. However, the historic context is relevant to the broader southern California region. In some cases, the resource description references significant cultural resources adjacent to or just outside of the study area if those resources relate to cultural themes represented by study area resources.

Historic Context and Associated Resources

Prehistoric Period (Prior to 1542)

The prehistoric chronology presented here was developed primarily from research in the Santa Monica Mountains (King and Parsons 2010). The territories of groups that occupied the San Gabriel Mountains extended to both the desert and the coast. Archeological evidence in the Angeles National Forest dates to at least 6,000 years ago (USFS 1986, USFS 2005).

The prehistory of the area revolves around Native American occupation that is represented exclusively by archeological resources. The oral history maintained by modern-day descendants and written versions that were collected after Euroamerican contact provide

information on the ancient past through an ethnographic perspective, but tangible archeological resources and their context within sites and cultural landscapes are the primary source of data on several millennia of human occupation by Native American groups in the distant past. The record of occupation extends back more than 10,000 years in the Channel Islands, with limited indications that a comparable timespan is represented in the Santa Monica Mountains (NPS 2013b).

Archeologists classify most of the prehistoric past in California in very general terms as the Early Period, but the last two millennia before historic European contact fit into the Middle and Late periods. In addition to a Clovis projectile point that was reportedly found at Point Dume, surface evidence from the Paleo Coastal Tradition is derived from numerous sites documented on surveys in the Santa Monica Mountains. Recent excavation at the Talepop site (CA-LAN-229) uncovered part of a probable house floor that is estimated to be 7,000-8,000 years old, as well as an archeological deposit that was considerably deeper and older than the house (King and Parsons 2012). These very ancient occupations are distinguished from the majority of the Early Period timeframe during which an abundance of groundstone tools such as manos and metates used to process plant seeds led archeologists to refer to this time after 7,000 years ago as the Millingstone Horizon. The Little Sycamore site (CA-VEN-1) and the Tank Site (CA-LAN-1) on the Santa Monica Mountains coastline both played a key role in identifying and dating the Millingstone Horizon (Dallas 2013; Wallace 1954). For the Santa Monica Mountains, a later phase of the Early Period is when mortars and pestles began to accompany milling stones. These new forms reflect intensive use of acorns during the past 4,000-5,000 years.

The Middle Period is dated from roughly 800 B.C.-A.D. 1250 (King and Parsons 2010). The Chumash Tradition emerged as an identifiable archeological complex during this time throughout most of the Santa Monica Mountains and areas to the west and northwest, as well as the adjacent Channel Islands. This interval can be subdivided into finer increments based on the types of shell beads which were common and important items of manufacture and exchange linking the Channel Islands and other coastal sites with inland areas during the Middle Period (King 1990; King and Parsons 2010). Long-distance exchange including trade with the Southwest became increasingly common during this period, along with increases in population, conflict, and subsistence intensification coinciding with significant warming in climate and environmental stress during the last 400-500 years of the Middle Period (Jones et al. 1999). An important maritime innovation dating to the first millennium A.D. was the creation of large sea-going canoes made by lashing large planks together and caulking the seams with asphaltum (natural tar deposits which are common in the Santa Barbara Channel and adjacent areas). These canoes were essential for obtaining sea mammals and large pelagic fish in much greater quantities than possible previously. Hunting of terrestrial mammals was facilitated by the transition from the spear/atlatl to the bow and arrow approximately 1,500 years ago. This is seen in the appearance of small projectile points.

Disruptions in trade and rapid changes in bead styles and technology occurred during the 1200s (King 1990). The Late Period followed these shifts and lasted until European colonization in the late 1700s. Groundstone tools indicate the continued importance of plant foods in addition to hunting, fishing, and collecting of shellfish. Rock art, primarily pictographs painted in protected rockshelters but also including petroglyphs pecked into stone, is potentially quite ancient, but the easily eroded types of bedrock suggest that surviving Native American rock art in the area is associated with the Late Period (King and Parsons 2010; Knight 1999). Abstract, anthropomorphic, and other naturalistic representations are most common, frequently depicted in very stylized fashion that is characteristic of Chumash art (Knight 1999; King and Parsons 2010). At the time of European contact, the Chumash resided in large permanent villages in coastal and valley settings. They lived in substantial dwellings built of wood, brush, rushes, and other perishable materials that do not normally survive well in archeological sites. Chumash "tomols" (sewn-plank canoes) were some of the largest, most seaworthy maritime vessels observed during early European explorations along the West Coast.

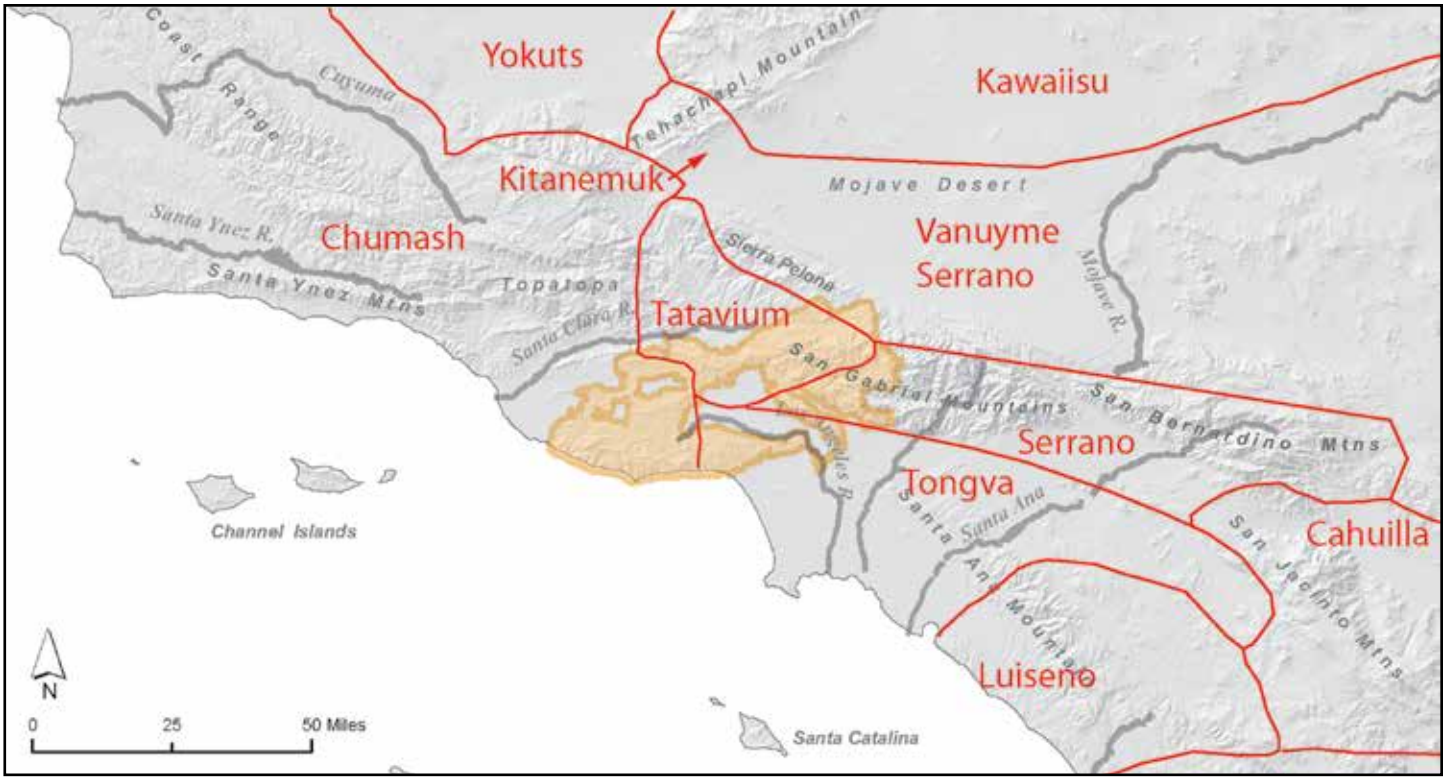


Figure 2-11: Ethnographic Native American Territories

Native American populations of the Los Angeles basin are believed to have been relatively numerous, even by California standards.

In applying this chronology to the study area it is important to remember that some prehistoric sites will show evidence of more than one period, while others will not.

Native American Groups

Native American populations of the Los Angeles basin are believed to have been relatively numerous, even by California standards. Despite the absence of elaborate infrastructure, the relationship of these native peoples to their environment was highly sophisticated. Local sources of fresh water were sufficient to support these cultures and permanent villages were situated close to such water sources. They developed technologies and social structures over many generations which allowed them to live comfortably within the natural limitations of the southern California environment. Examples of these indigenous technologies can provide interesting and instructive counterpoints to the strategies of later cultures, which have relied far more heavily on engineered solutions to overcome the natural limitations of their environment.

The study area lies within portions of the traditional territory of the Chumash, the western Tongva/Gabrielino, the Tataviam, and the Serrano as indicated in *Figure 2-11: Ethnographic Native American Territories* (Heizer and Sturtevant 1981, USFS 1986, King and Parsons 2010).

Chumash

The Chumash are typically associated with coastal areas from Malibu to San Luis Obispo, as well as the northern Channel Islands and mountainous areas as far inland as the Carrizo Plain. The area inhabited by the Chumash measured approximately 200 by 70 miles. In size, this compares to the smallest states of the eastern United States. The total Chumash population included between 15,000 - 20,000 people (King and Parsons 2010).

The Chumash were one of the first major groups of Native Americans to be encountered by Europeans on the west coast. Juan Rodriguez Cabrillo noted the names of many Chumash settlements upon an exploring trip up the coast in 1542. Later Captain Gaspar de Portola passed through Chumash territory on a quest to find Monterey Bay in 1769. Each of these expeditions provided early historical accounts of the Chumash (Grant 1981).

Tongva/ Gabrielino

Areas associated with the Tongva include the Los Angeles basin in southern Los Angeles County, northern Orange County, extreme

The study area has an impressive archeological record with more than 1,700 documented sites, most of which are associated with the prehistoric period.

western Riverside and San Bernardino Counties, and the southern Channel Islands. The Tongva were also known as Gabrielinos because of their incorporation into Mission San Gabriel (McCawley 1996, Bean and Smith 1978; Kroeber 1976, King and Parsons 2010).

The Tongva became, with the exception of the Chumash, "the wealthiest, most populous, and most powerful ethnic nationality in aboriginal southern California" (Bean and Smith 1978, Robinson 1991). According to some estimates, the Tongva population exceeded 5,000 at the time of contact (Johnston 1962; Bean and Smith 1978; Robinson 1991).

Tataviam

The Tataviam territory, located to the north of the Tongva, would include the Upper Santa Clara River drainage east of Piru Creek, extending over the Sawmill Mountains to the north to include at least the southwestern fringes of the Antelope Valley. Mount Gleason in the San Gabriel Mountains at 6,500 feet was the highest point in their territory (King and Blackburn 1978; Robinson 1991). Tataviam villages varied in size from large centers to small settlements. At the time of contact, the Tataviam population was probably less than 1,000 people (King and Blackburn 1978). Tataviam are one of the least known groups in all of native California (Johnston 2006).

Serrano

Serrano are associated with the San Gabriel and San Bernardino Mountains, the eastern San Gabriel Valley, and eastern Los Angeles basin. The Vanyume Serrano within the study area are associated with the Mojave Desert floor, north of the San Gabriel Mountains (Northwest Economic Associates and King 2004, USFS 1986).

Associated Resources (Prehistoric period)

Archeological resources in the study area date to more than 10,000 years. Most sites, and especially the largest villages that were inhabited, were located in mountain passes, at the mouths of creeks, and along the seashore, where there was an abundance of food. The range of sites documented within the study area include pictographs, special use sites, village sites, camp sites, cemeteries, organic remains, and other sites which contain evidence of trade systems and subsistence, including hunting, fishing, and plant resource extraction. The presence or absence of specific artifact types, and changes in their material, form and manufacturing technique can provide valuable evidence of cultural and economic changes through time, as can changes in burial practices. Objects or artifacts of exotic origin provide evidence of trade networks. Pieces of Hohokam pottery from southern Arizona for example, have been found at a prehistoric site in the vicinity of Big Tujunga Wash (CA-LAN-167), and pottery from the Anasazi area of Arizona and New Mexico has been identified at Century Ranch (CA-LAN-227) in the Santa Monica Mountains. Midden sites at coastal sites have abundant shellfish remains, while those inland often contain floral and faunal remains such as carbonized seeds, and mammal, bird and fish bones that provide valuable information on prehistoric environments and food procurement strategies. The analysis of these resources can provide valuable information on the cultural heritage of the region (Moratto 1984).

The study area has an impressive archeological record with more than 1,700 documented sites, most of which are associated with the prehistoric period. More than twenty recorded sites have been formally listed or determined eligible for listing in the National Register of Historic Places (*Table D-8: Cultural Resources Related to the Prehistoric Period (Prior to 1542)* in *Appendix D*). Most of the documented sites (more than 1,000) are located within Santa Monica Mountains National Recreation Area (which includes portions of the Simi Hills); while nearly 200 more are located in the western San Gabriel Mountains and foothills. The remaining sites are primarily located in the Simi Hills, Santa Susana Mountains and Conejo Mountain/Las Posas Hills areas.

Santa Monica Mountains

The Santa Monica Mountains include important sites that reflect more than 10,000 years of human occupation and use. Many archeological sites in the Santa Monica Mountains have also been listed or determined eligible for listing in the National Register of Historic Places. Some sites are located on private land while others are on NPS or other agency-owned lands. Archeological sites and investigations have contributed to scientific understanding of the Chumash and Tongva cultures that inhabited the area (NPS 2002). One such site, the Chumash settlement of Talepop (CA-

Santa Monica Mountains National Recreation Area's 26 known Chumash pictograph sites are among the most spectacular in the world.

LAN-229), is so well-preserved that it can be used to discern the spatial organization of the village through time, including the identification of past cemeteries and public spaces used for ceremonies and festivals. It also contains the remains of residences that show clear differences in material wealth and economic roles of the former inhabitants. These contrasting household remains can be used in the comparative study of economic and social developments over time (King 2012).

Another major village site in southern California, Humaliwo (CA-LAN-264), is located in the Santa Monica Mountains at the lagoon in Malibu. The site, which was listed in the National Register of Historic Places in 1976, represents more than 3,000 years of use, through the Spanish mission period of the early 19th century. Chumash inhabitants of the site were recorded in the archives for the San Buenaventura mission. The site contains a historic cemetery, Late and Early Middle period deposits, and a Middle Period cemetery (Merrick 1976, Gamble et al. 1996).

The Point Mugu and Calleguas Creek areas to the west of the mountains also contain several important sites. Point Mugu was an important Native American trade route. Located at the western foot of the Santa Monica mountains adjacent to the Oxnard Plain, both areas include some of the few remaining sites that represent Native American occupation and use of former delta environments in southern California (Wessel 1975; NPS 2002). A shell midden and burial site at Calleguas Creek in Ventura County was listed in the national register (CA-VEN-110) for its potential to yield information about inhabitants during the transition from the Middle to Late Periods (McIntyre 1975).

Also of significance is a multi-component coastal site on Point Dume (Farpoint Site, CA-LAN-451) where a projectile point was reportedly uncovered that may be of Clovis origin. Clovis is the name archeologists have given to the earliest well-established human culture on the North American continent. The site was determined eligible for listing in the National Register of Historic Places, largely for its potential to yield data critical for the scientific understanding of the first inhabitants of California and the western United States (Stickel 2006).

Santa Monica Mountains National Recreation Area's 26 known Chumash pictograph sites are among the most spectacular in the world. These pictographs are sacred to American Indians (NPS 2002). The privately owned Saddle Rock Ranch Pictograph Site (CA-LAN-717), also known as the "Cave of the Four Horsemen," is considered to be of national significance. The site consists of a rockshelter (a shallow cave or rock overhang occupied by humans) and a midden (an accumulation of debris and domestic waste accompanying a human habitation site). Nearly 100 painted figures and abstract elements (pictographs) were probably added to the rockshelter after 500 A.D. Not only are the extensive and well-preserved pictographs characteristic of the final development of the distinctive Chumash style, but they include the only depictions in Chumash art of human figures in profile and of mounted horsemen. The horsemen portrayed in the pictographs are considered to be a representation of Gaspar de Portola's exploring party, which journeyed through the area in 1769-70. The Saddle Rock Ranch site will probably continue to yield information of major scientific importance about Chumash life, including data on settlement patterns, trade, religion, cosmology, and the possible use of the site for astronomical observation.

The Saddle Rock Ranch Pictograph site was listed in the National Register of Historic Places on February 12, 1982. The site was determined to be potentially eligible for designation as a national historic landmark on March 16th, 1990 by the Secretary of the Interior (NPS 2012b).

San Gabriel Mountains

Sites in and around the San Gabriel Mountains have been determined eligible for listing in the National Register of Historic Places, including 12 within the study area. The western San Gabriel Mountains area was primarily the territory of the Tongva, Tataviam, and Serrano. The Aliso-Arrastra Special Interest Area located south of the town of Acton near State Highway 14, and the Chilao Flats area near the Angeles Crest Highway are two areas of note in the Angeles National Forest. The Aliso-Arrastra Special Interest Area provides strong evidence of regional trade networks during the Late and Middle Periods, including steatite objects from the Channel Islands and



Saddle Rock Ranch Pictograph site in SMMNRA includes extensive and well-preserved pictographs characteristic of the final development of the distinctive Chumash style. They include the only depictions in Chumash art of human figures in profile and of mounted horsemen. Photo: E.P. Tripp/NPS.



The Burro Flats Painted Cave in the Simi Hills includes a series of pictograph panels that appear to have included at least some astronomical significance, since it is aligned with the solstice. Burro Flats lies within the traditional territory of the Chumash. Photo: NPS.

obsidian objects from the Owens Valley. Sites here range from long-term occupation sites to seasonal encampment, resource procurement, and processing and storage sites. The area also contains rock art features (cupules) determined eligible for National Register of Historic Places nomination. The Chilao Flats area, in the eastern most portion of the study area contains documented sites that include service centers, habitation, processing, and production sites (USFS 2006). The village site here was an important political capital for the Serrano. Located in the San Gabriel Mountains foothills, just south of the Angeles National Forest, the village of Tujunga covers a larger area, both above and below the Hansen Dam and has potential for scientific discovery (CA-LAN-167). Excavations at this site have uncovered Hopi pottery, evidence of trade networks.

Other Areas

Outside of the Santa Monica and San Gabriel Mountains, archeological resources in the study area have not been extensively surveyed, but provide great potential for scientific discovery. One exception is the Santa Susana Pass area where 23 prehistoric sites have been documented. The Santa Susana Pass is the junction between the Simi Hills and the Santa Susana Mountains and served as a transition zone between the territories of Chumash, Gabrieleno/Tongva, and the Tatavium (CSP 2005). A recent survey of the Santa Susana Pass State Historic Park uncovered 31 new sites in addition to the area's 12 previously recorded sites. One site is listed in the National Register of Historic Places (CA-LAN-448/449). This multi-component site includes a prehistoric rockshelter with petroglyphs and artifacts, a prehistoric village site, a historic sandstone quarry, and a historic trash dump. Historic features related to the stage route that traversed this area are also included in the national register listing (CSP 2005). A village site uncovered in the park is thought to be the Tongva village of Momonga (CA-LAN-449) (Mealy and Brodie 2005). Other notable sites include rock art displays at Oat Mountain (Santa Susana Mountains), Conejo Mountain, and Castle Peak (Simi Hills).

The Simi Hills contain petroglyphs distinct from those found in the Santa Monica Mountains. Rock art sites in the Santa Monica Mountains are primarily red pictographs transcribed onto Miocene volcanic rocks. In the Simi Hills and Santa Susana Mountains rock art includes red pictographs, polychrome pictographs, and occasionally petroglyphs (Knight 2001). The most spectacular rock art site outside of the Santa Monica Mountains is the Burro Flats Painted Cave in the Simi Hills (CA-VEN-1072). This site includes at least eleven distinct loci, or concentrations, of cultural activity and their resultant deposits, all of which are suspected to belong to a single, unified settlement. Among these deposits are a series of pictograph panels located within a shallow concavity of a natural sandstone

The most spectacular rock art site outside of the Santa Monica Mountains is the Burro Flats Painted Cave in the Simi Hills (CA-VEN-1072).

outcrop. The site appears to have included at least some astronomical significance, since it is aligned with the solstice. Burro Flats lies within the traditional territory of the Chumash, whose interest in astronomical phenomena was observed and recorded by ethnographer J.P. Harrington. The site was also noted for its astronomical significance in E.C. Krupp's *Echoes of the Ancient Skies: The Astronomy of Lost Civilizations*. The coincidence of this prehistoric astronomical site with the location of NASA's Santa Susana Field Laboratory test areas which helped to develop the earliest manned and unmanned exploration of deep space is notable and should be the subject of both preservation and interpretive efforts. Burro Flats was listed in the National Register of Historic Places in 1976.

Although just outside of the study area boundary, it should be noted that at the northern base of the Santa Susana Mountains, a site known as Bowers Cave near Val Verde reportedly yielded a diverse assemblage of American Indian religious and ceremonial artifacts following its discovery in 1884 (City of Santa Clarita 2011). Also of note are Tatavium rock art examples in Vasquez Rocks County Park, located just outside of the study area near Soledad basin.

Initial European Encounters/Spanish Period (1542-1822)

The earliest recorded European encounter with southern California and its indigenous inhabitants dates from 1542, when Juan Rodriguez Cabrillo sailed from New Spain (present-day Mexico) to explore the unknown Spanish colonial frontier to the north. Over the next two centuries, numerous European ships passed along the coast of California. Beginning in 1565, (more than twenty years after Cabrillo's visit), Spain opened a trade route from its recently acquired colony in the Philippines to the west coast of Mexico.

The extension of Spanish settlement into Alta California was largely the idea of the Spanish visitador general (royal deputy) José de Gálvez, who arrived in New Spain in 1765 to oversee the reorganization of its governmental and economic affairs. Gálvez proposed a northward expansion of New Spain's frontier as a means of reinvigorating the colony's stagnating fortunes, or at least of giving it the appearance of reinvigoration. By 1769, Gálvez's ambitious plans achieved their culmination with the departure of a combined military and religious expedition from the frontier of New Spain in Baja California. Led by Captain Gaspar de Portolá and Father Junipero Serra, the expedition traveled overland up the coast to San Diego, where the first presidio (military garrison) and mission were established in Alta California. It then continued to Monterey where a second presidio and mission were founded. On its way north, the Portolá expedition traveled through the Los Angeles basin, the San Fernando Valley, and the Santa Clara Valley. They passed near the Tongva village of Yangna on the Los Angeles River, which they named El Rio de Nuestra Señora de los Angeles de Porciúncula, from which the present name Los Angeles is derived. They entered the San Fernando Valley by way of Sepulveda Pass and stopped at the large Tongva village of Siutcabit, which lay near the spring-fed pool at present Los Encinos State Historic Park. The expedition named the San Fernando Valley El Valle de Santa Catalina de Bononia de los Encinos after the many large valley oaks (encinos) which grew on its broad savanna. Following the recommendations of the Tongva, the expedition left the valley on an existing Indian trail through San Fernando Pass to the Santa Clara Valley and from there continued north along the coast by way of Ventura.

Over the next fifty years, the Spanish settlement in Alta California would expand to a total of twenty-one missions, four military presidios and three civilian towns (or pueblos). The region would remain isolated from colonial population centers and would never be able to attract many Spanish settlers. Anticipating this problem, the Spanish authorities chose instead to Hispanicize the Indigenous people, acculturating them to Spanish ways of life and baptizing them in the Catholic Church. The missions were an essential element in this plan. They were to serve as cultural and spiritual training camps, where the Indians would all be gathered in one place (reducidos) and taught how to live like Christian Spaniards, albeit as peons, the lowest class in Spanish society.

Missions were generally established near existing native population centers. These native population centers were typically located near water sources. Missions constructed open canals (zanjas) to irrigate agricultural fields

Located at the Tongva village site of Yanga along the present-day Los Angeles River, west of Mission San Gabriel, missionaries and neophytes established the first town of Los Angeles (El Pueblo de Nuestra Senora la Reina de los Angeles de Porciuncula or El Pueblo) in 1781.

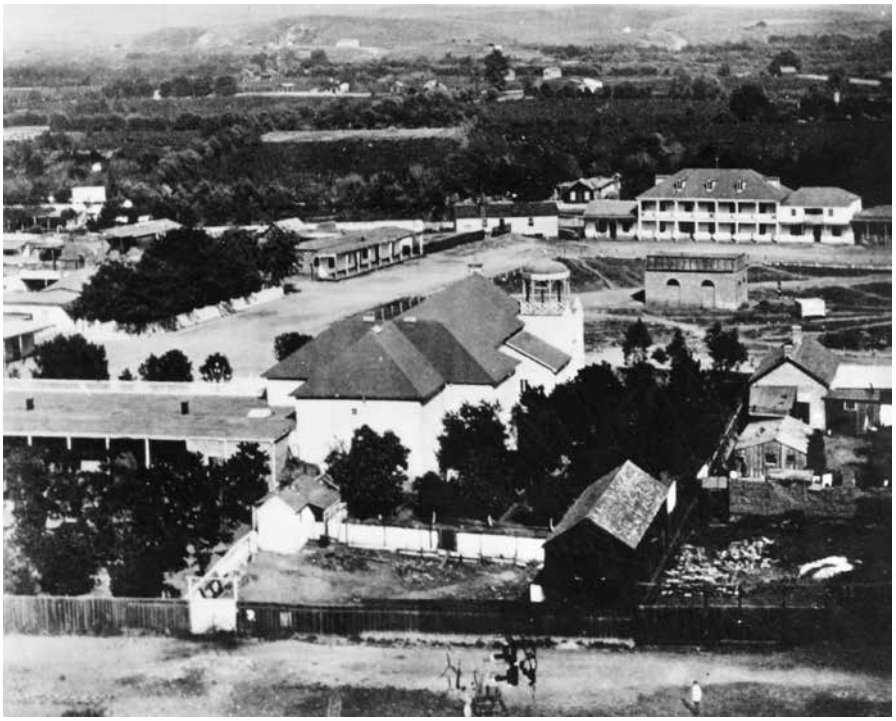
and to provide for domestic use. Mission San Gabriel, for example, the fourth mission to be established in 1771, was located at the north end of the broad Los Angeles basin (southeast of the study area) near several large Tongva villages (Engelhardt 1927a). Mission San Fernando Rey de Espana was established in 1797 (the seventeenth in the system), considerably later than others in the area, and was located at the northeastern end of the San Fernando Valley (Engelhardt 1927b). This placed it close to several large Tongva villages but also near the border of the Tataviam territory which began just over San Fernando Pass to the north and west.

Each mission recruited Indians from the region immediately surrounding it using a variety of both coercive and persuasive means. Owing to the difficulty of supplying the Alta California settlements from New Spain, the missions had to be largely self-sufficient. By 1811 the neophyte (baptized Indian) labor force was not only supporting the missions but the entire military and civil government of Alta California. This represented the earliest significant economic activity in European California. During the Spanish and early Mexican periods (from 1769 to about 1833), the missions were the principal source of economic production.

The Spanish colonies of Alta California were physically isolated and difficult to resupply from the principal population centers of colonial New Spain (today's Mexico). Although most of the Alta California settlements lay on or near the coast, the prevailing winds and currents from the north, as well as frequently heavy fogs, made the ocean journey difficult and extremely dangerous for the small, square-rigged ships used by European mariners of that time. But the alternative of traveling overland by a direct route up the coast was equally daunting on account of the rugged mountains and dense brush which extended nearly the entire distance. As the Spanish government faced increasing competition from rival European nations over control of California, however, it continued to seek an effective means of reaching its northern-most settlements and linking them more closely with New Spain. Among the likeliest possibilities was an alternative overland route from the east, which Juan Bautista de Anza, captain of the small presidio of Tubac in present-day Arizona, proposed in 1773. Juan Bautista de Anza successfully made this journey in 1774, passing through the Colorado Desert to reach San Gabriel Mission near Los Angeles. He repeated his journey the following year, this time leading a party of approximately 240 colonists, along with their cattle, horses and other equipment. The expedition entered southern California from the southeast, continuing west and north along the now-established path of El Camino Real. Its route passed through the study area along the northern slope of the Santa Monica Mountains west of Cahuenga Pass. The Anza Expedition had far reaching consequences for the development of an important region of the United States. It helped to establish a strategic northern Spanish military outpost that eventually evolved into the city of San Francisco.

Located at the Tongva village site of Yangna along the present-day Los Angeles River, west of Mission San Gabriel, missionaries and neophytes established the first town of Los Angeles (El Pueblo de Nuestra Senora la Reina de los Angeles de Porciuncula or El Pueblo) in 1781. El Pueblo was established by a diverse group of settlers (Los Pobladores) that included Spanish, Native Americans, Black, mestizo, and mulatto settlers (Garcia, Flores, and Ehrlich 2004). The Pobladores constructed an earthen canal almost immediately in order to divert water from the river to the town plaza for domestic and agricultural use. The canal was known as the Zanja Madre, or "mother canal," and would remain the principal source of fresh water for the city into the twentieth century. El Pueblo would become the nucleus of the present city.

Despite the success of the missions in achieving their immediate practical goals, the larger Spanish objective of creating an indigenous citizenry ultimately proved a failure and was a profound tragedy for the Indians themselves. The native population of California declined by as much as a third during the 65 years of the missions' active existence, with most of this loss suffered by the Indians of the coastal regions who were most directly affected by the mission system. Exotic diseases introduced by the Spanish occasionally resulted in epidemics which not only devastated the mission communities but often spread throughout the surrounding country. The most notable of these outbreaks occurred in 1806, when measles



This 1869 photo of El Pueblo, viewed towards the southeast, shows the Plaza with a brick water reservoir in the center that was built in 1858 to hold water conveyed via the Zanja Madre. In the foreground is the back of the Plaza Church and in the background the Lugo House. Photo: Security Pacific National Bank Collection/Los Angeles Public Library.

The Zanja Madre, or "mother canal," would remain the principal source of fresh water for El Pueblo into the twentieth century.

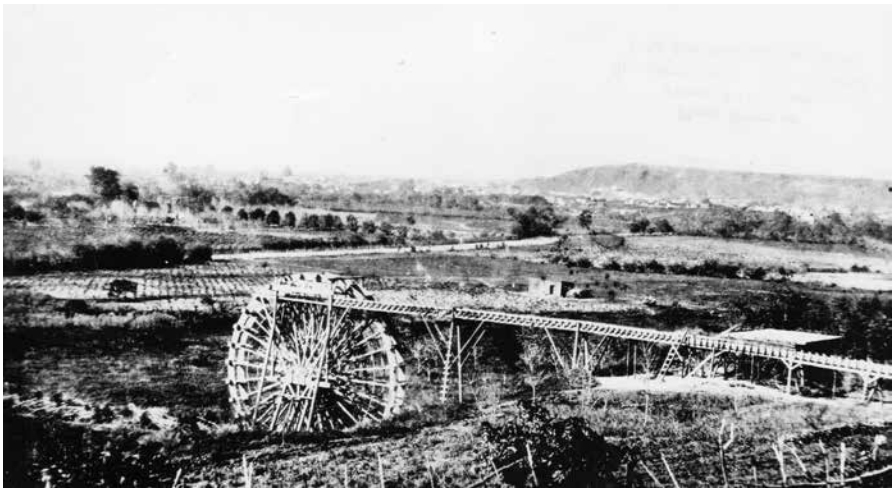
reduced some mission populations by as much as a fourth. However, for most of the mission period, population decline was the result of a more gradual attrition resulting from factors which included high infant mortality, poor nutrition and hygiene, and psychological stress. In many missions, the death rate exceeded births, and the neophyte population had to be maintained by bringing more Indians in from the surrounding country. Eventually, the Spanish resorted to using military raids to capture Indians from the interior valleys and foothills.

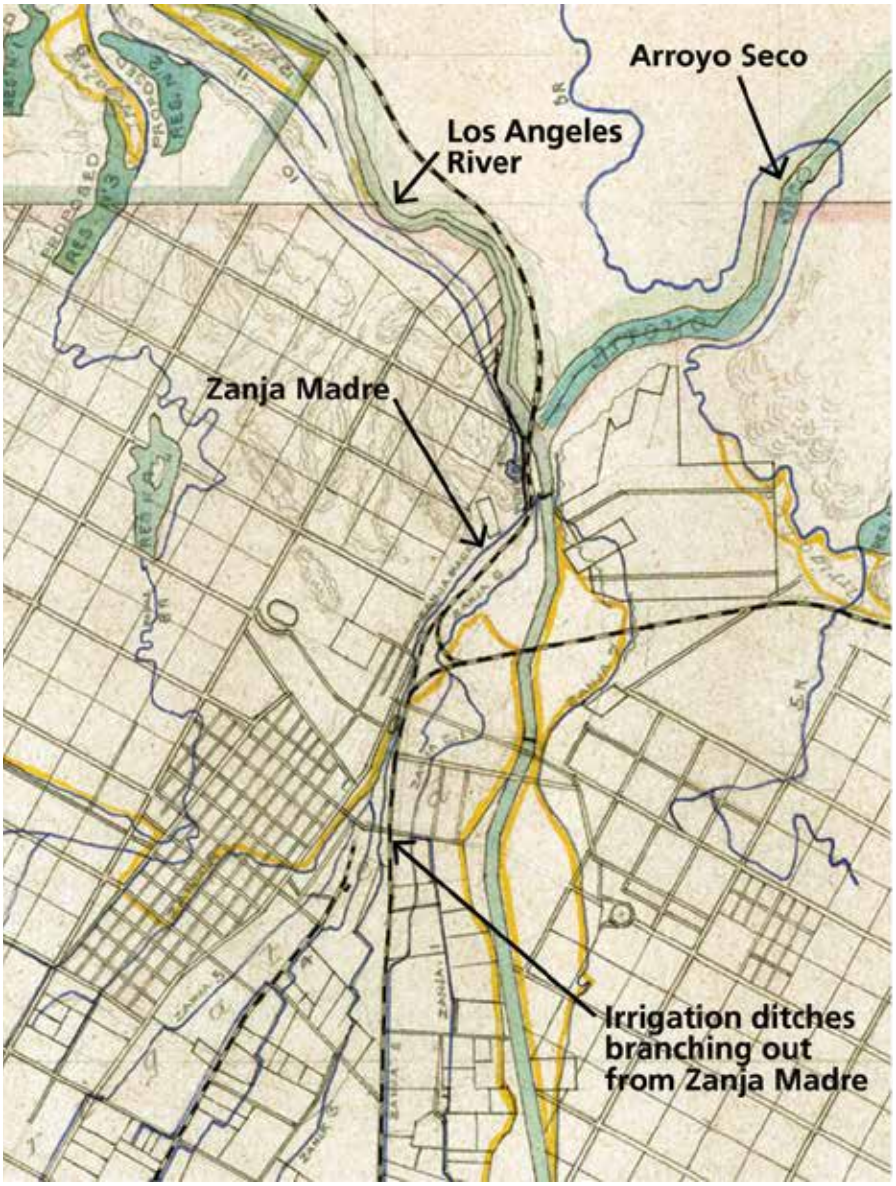
Associated Resources (Spanish Period)
Study area resources associated with the Spanish Period include Portola and Anza expedition campsites, portions of El Camino Real, and El Pueblo de Los Angeles Historical Monument, the site of the original pueblo established in 1781 (*Table D-9: Cultural Resources Related to the Spanish Period (1542-1822)* in *Appendix D*). Campsite locations for the Portola expedition include Los Encinos State Historic Park (listed in the National Register of Historic Places in 1971) and Elysian Park (California Historic Landmark).

The Juan Bautista de Anza expedition is commemorated by the national historic trail, established in 1990. The study area includes approximately 22 miles of the 1,200 mile long Juan Bautista de Anza National Historic Trail, managed by the NPS which is significant for its role in the early settlement of California by the Spanish. The trail, designated in 1990, represents the route taken by Juan Bautista de Anza in 1775–1776 when he led a group of colonists from Mexico into the northwestern frontier of New Spain (present-day San Francisco). The trail provides opportunities for visitors to experience landscapes similar to those the expedition encountered and to visit sites associated with the expedition. The national historic trail is interpreted at several sites within, or in close proximity to, the study area where the character of the landscape and associated structures convey the significance of the historic period. These sites include Solstice Canyon and Malibu Creek State Park (within SMMNRA) and Los Encinos State Historic Park (San Fernando Valley).

El Pueblo de Los Angeles Historical Monument includes Los Angeles' oldest and most historic structures clustered around the pueblo's old plaza. Notable buildings of significance during this period include Nuestra Senora La Reina de Los Angeles Church (1822) and Avila Adobe (1818); the city's oldest surviving residence. Archeological excavations here have also uncovered artifacts from the indigenous period (before 1781), the Spanish colonial era (1781–1821), the Mexican era (1821–1847), and the first century of the American era (1850s–1940s). Portions of the pueblo's water system, Zanja Madre have been uncovered near the Los Angeles State Historic Park and in present day Chinatown. Although artifacts associated with the Zanja Madre date to later modifications of the canals, the alignment in many areas remains consistent with the Spanish Period alignment (Crawford 2000; Cogstone Resource Management, Inc. 2003).

Among the significant Spanish-era transportation corridors was El Camino Real, which loosely connected the early colonial establishments of Alta California. Present Highway 101 follows the approximate route of El Camino Real throughout southern California, passing through the study area where it parallels the northern slope of the Santa Monica Mountains from Cahuenga Pass west. El Camino Real is ambiguous as a historic property, since it was poorly defined (if well-used) during the





The Los Angeles River provided the original water source for El Pueblo and then the City of Los Angeles. The Zanja Madre, or "Mother Ditch", conveyed water from the river to El Pueblo. The photo, dated 1862, shows the water wheel which lifted water from the river into the Zanja Madre. The Zanja Madre conveyed water into a network of other irrigation ditches that were developed over time as shown in the map (ca. 1880s). Portions of the Zanja are still being unearthed today. Photo: Security Pacific National Bank Collection/Los Angeles Public Library. Map: Detail Irrigation Map Southern California-Los Angeles ca.1880s, William Hammond Hall Papers, 91-07-04, 91-06-10/ California State Archives.

historic period with which it is primarily associated. Much that remains or is commemorated today is more closely connected with early twentieth century attempts to encourage tourism. This does not diminish its historic significance but places it within a different context with a different period of significance. In this respect, El Camino Real reflects Anglo-American romanticization of Hispanic California more than it does Hispanic California itself.

Mission San Fernando Rey de Espana is located in close proximity to the study area in the San Fernando Valley community, Mission Hills. The mission was restored from ruins in the first half of the twentieth century and reconstructed again in 1974 after it was severely damaged in the 1971 San Fernando earthquake. Listed in the National Register of Historic Places in 1988, the mission remains an active Catholic Church.

The Mexican Period (1822-1848)

In 1821, the Spanish viceregency in colonial New Spain was overthrown and the Republic of Mexico was established in its place after more than a decade of fighting. With legalization of foreign commerce under the new Mexican government after 1821, trade in cattle products (hide and tallow) quickly grew and soon created a strong incentive for the establishment of secular ranches. In late 1829, Mexican trader Antonio Armijo led a commercial caravan from Abiquiu, New Mexico (near Santa Fe) to Los Angeles, opening the Old Spanish Trail. This was the first attempt by Europeans to reach Alta California from the inland southwest since the Yuma uprising had closed the Anza Trail nearly fifty years earlier. Armijo avoided difficulties with the southern tribes by going north to cross the Colorado River above the Grand Canyon before heading south and west across the Great Basin to California. This route led him into southern California through Cajon Pass between the San Gabriel and San Bernardino Mountains. Among the principal goods which were carried over the Old Spanish Trail were horses and mules obtained from the Mexican ranchos in Alta California—often illegally—to be sold in Santa Fe and other points east.

The Old Spanish Trail had wide-ranging effects on the economy of the Mexican Southwest, helping to establish Santa Fe as a com-

By 1840, ranchero pastoralism had replaced mission agriculture as Alta California's principal economic activity.

The impact of the Mexican period of the ranchero, short though it was in years, has been disproportionately significant in terms of the patterns of land ownership and management practices which have characterized California—especially southern California—subsequent to the period of Mexican political hegemony.

mercial hub in a continental trade network linking Mexico and the United States. The illicit trade in horses which this network supported may have had a significant negative impact on the ranchero economy of Mexican California. The commercial importance of the Old Spanish Trail quickly diminished after the United States took control of the Southwest in 1848, altering the balance of economic relations throughout the region, but segments of the Old Spanish Trail continued to be used and remained significant within other contexts. For example, the route which the trail took into Los Angeles over Cajon Pass and along the foot of the San Gabriel Mountains would later be used by U.S. Route 66.

The secular ranches of this period, known as ranchos, were actively encouraged by Mexican authorities with the Colonization Act of 1824 and the Supplemental Regulations of 1828, but little good land was available for prospective rancheros because most was already taken up by the missions. As a result, the ranchero economy was not able to develop until after the Secularization Act of 1833, which redistributed mission lands and other material assets of the religious establishments. Although most of these resources were supposed to go to the Christianized Indians, who were now considered Mexican citizens, the vast majority went instead to a handful of Hispanic Californians with ties to the new liberal government.

By 1840, ranchero pastoralism had replaced mission agriculture as Alta California's principal economic activity. More than 800 private grants were issued by the Mexican government during the brief fifteen years of the ranchero period (from secularization in 1833 to the conclusion of the Mexican-American War in 1848). Fewer than twenty had been granted during the previous period under Spanish rule. The Mexican grants averaged many thousands of acres each and supported herds of cattle which numbered in the thousands. These cattle ranged over more than ten million acres of grant lands between northern California and San Diego (Burcham 1957).

Mexican-American War (1846-1848)

The Mexican-American War, which lasted from 1846 to 1848, resulted in the annexation of Alta California by the United States and brought to an end the period of the Mexican ranchero's dominance. Southern California played an important, though largely peripheral, role in these military events. It was the site, for example, of the only battle lost by U.S. forces, when General Kearny's troops were defeated by a small band of Mexican Californios at San Pascual (near present-day Escondido) in December of 1846. The Treaty of Cahuenga, which brought an end to fighting in California on January 13, 1847 (though the war continued elsewhere), was signed at Rancho Verdugo near the foot of the Santa Monica Mountains. These events, collectively known as the Battle of Los Angeles, would have little consequence on the ultimate outcome of the war, though the temporarily successful resistance of local Californios may have influenced their standing in the aftermath.

Associated Resources (Mexican Period)

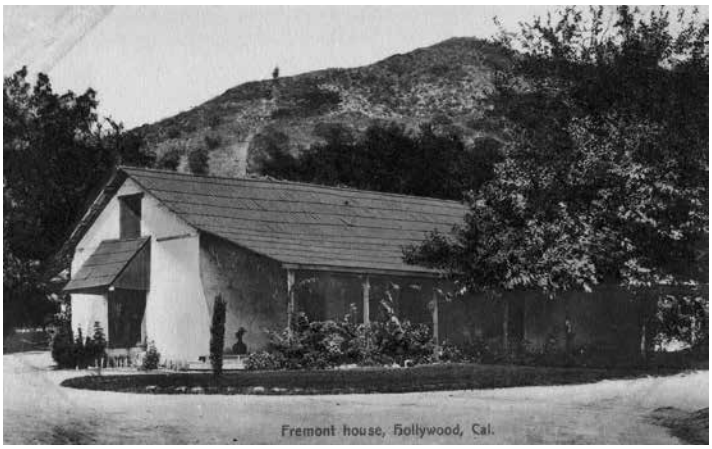
The impact of the Mexican period of the ranchero, short though it was in years, has been disproportionately significant in terms of the patterns of land ownership and management practices which have characterized California—especially southern California—subsequent to the period of Mexican political hegemony. This significance has expressed itself in the large landholdings of companies such as the Irvine Company, Tejon Ranch, and the Simi Land and Water Company, among others.

Many historic properties associated with this period and its economic activities are still at least partly extant throughout southern California (*Table D-10: Cultural Resources Related to the Mexican Period (1822-1848)* in *Appendix D*). Some of the most noteworthy of these properties lying within or adjacent to the study area are Rancho Simi (Simi Hills), Rancho San Rafael (Verdugo Mountains), and Rancho Los Encinos (San Fernando Valley).

Rancho Simi at 113,000 acres took its name from the Chumash village of Shimiji which was located here. Most of the original rancho is now part of the incorporated Simi Valley. The ranch headquarters, however, and approximately six acres of surrounding land remain protected within the Strathearn Historical Park and Museum, managed by the Rancho Simi Valley Recreation and Parks District. The property, which includes a Mexican-era adobe and a Victorian-era wood frame



The site of Rancho Los Encinos includes a natural spring that provided a year-round source of water for the ancient village of Siutcanga, home to the Tongva people. Structures from the 1800s remain and are protected as part of Los Encinos State Historic Park. Photo: NPS.



This exterior postcard (n.d.) shows the Tomas Feliz adobe at Campo de Cahuenga where John C. Fremont and Andres Pico signed the treaty ending the fighting of the Mexican American War in California on January 13, 1847. Photo: M. Rieder/Los Angeles Public Library.

house from the subsequent American period of ownership, was listed in the National Register of Historic Places in 1978.

Rancho Los Encinos originally occupied the southern end of the San Fernando Valley. The site is currently protected within Los Encinos State Historic Park and includes the original adobe built by Vincent de la Osa, who acquired the rancho in 1849, as well as a two-story limestone farmhouse built in 1872 by later residents Eugene and Philipe Garnier, who were of Basque origin. Rancho-era adobes also include the Sepulveda Adobe in the Santa Monica Mountains, the Catalina Verdugo Adobe (Rancho San Rafael), and the Lugo Adobe at El Pueblo de Los Angeles Historical Monument.

Sites relevant to the Mexican-American War are Campo de Cahuenga where the Treaty of Cahuenga was signed between Mexican and American commanding officers. The site of the Oak of Peace at Rancho San Rafael is where Mexican General Andres Pico last addressed his troops before retreating to Mexico.

The nearby Rancho Camulos (Piru), although outside of the study area, is noteworthy. Rancho Camulos was designated a national historic landmark (NHL) in 1996 for its historic significance in association with the literary figure of Ramona. The publication of Ramona in 1884 propelled the rancho into nationwide notoriety romanticizing the mission and rancho era of California history. As the NHL nomination explains, "No other extant site is more strongly associated with Helen Hunt Jackson's novel Ramona, and the resource possesses exceptional value in interpreting the fictional 'Home of Ramona'."

The study area also includes the western terminus of the Old Spanish Trail, which served as an important commercial trade route during the Mexican period. The Old Spanish Trail has been determined to have national significance and was designated a national historic trail in 2002 (managed by the NPS).

It is difficult to see traces of the trail in the modern landscape because most of the routes of the Old Spanish Trail have been reclaimed by nature or changed by later use. However, some of the landmarks along the trail can be seen today. El Pueblo de Los Angeles Historical Monument within the study area was the final destination of the Old Spanish Trail and is now part of the Old Spanish National Historic Trail visitor experience.

The American Period (1848-Present)

The American Period brought significant change to the Los Angeles region which grew from a small agricultural enclave to a large metropolitan area. The arrival of the transcontinental railroad made the region more accessible and many Americans and other immigrants relocated here, lured by the mild climate and pastoral landscape. Growth was further fueled by the discovery of oil and the burgeoning film industry. Major public works efforts, such as the importation of water, were employed to overcome resource limitations. Although many communities flourished dur-



This image (ca. 1860s) shows adobe housing along a street known at the time as "Calle de los Negros" east of the Plaza of El Pueblo, which was the site of the Los Angeles Massacre of 1871. This street eventually was integrated into Los Angeles Street a few years later and this block of housing was demolished in the 1880s. These properties were initially owned and occupied by the Mexican owners of the various Los Angeles area ranchos and later occupied by Chinese people. Photos: Security Pacific National Bank Collection/Los Angeles Public Library.

ing this time, some residents were displaced or deported as a result of discriminatory laws and policies.

Gold Rush and Pastoralism (1848-1875)
The discovery of gold in northern California brought a flood of new immigrants to California from the eastern United States and other countries. Gold had been discovered in Placerita Canyon as early as 1842. This discovery may have contributed indirectly to the more famous and consequential discovery in northern California in 1848. Over the next decade, California's non-Indigenous population increased from approximately 15,000 in 1848 to nearly 380,000 by the 1860 census. But the majority of these newcomers went to northern California and to the goldfields in the foothills of the Sierra Nevada. During the first three decades of the American period, only a small but steady stream of new immigration flowed into southern California, where the population remained predominantly Hispanic and relatively small. The population of Los Angeles grew from about 1,600 to more than 11,000 (during the same period San Francisco grew from a population of less than 1,000 to nearly 250,000).

The most significant impact of the Gold Rush on southern California was economic. It created a lucrative market for beef and mutton which stimulated the pastoral industries and resulted in their greatest expansion. The ranges were intensively stocked and overgrazed, a fact which contributed to their collapse following a catastrophic drought in 1863-1864.

Following the collapse of cattle-dominated pastoralism by the mid-1860s, sheep would become the most important livestock industry in California. At the same time, agriculture, dominated by American immigrants from the east, began to replace pastoralism in economic importance. The earliest period of American agriculture in California was characterized by extensive dry farming, primarily of wheat. The majority of this activity took place in the Central Valley, but southern California was also a major producer. The pastoral economy would continue to define the region's principal commerce and industry up until the late 1870s or early 1880s.

Although Los Angeles at this time was comprised of many ethnic groups (African Americans, Hispanics, Asians, Euro-Americans and others), it was far from a harmonious existence. Vigilante justice mixed with the racist and nativist ideologies of the times sometimes had tragic results for ethnic groups. (CDPR 2012).

Beginning in 1848, Chinese immigration to California was encouraged to provide inexpensive farm labor. Chinese immigrants also played a significant role in the completion of the transcontinental railroad system. The first permanent settlement in Los Angeles was established in 1856. Despite the contributions made by Chinese to the growth and expansion of the west, immigrants were greatly affected by discriminatory laws which prevented them from becoming naturalized citizens until 1943. The Chinese Exclusion Act of 1882 banned immigration by Chinese laborers into the United States for the next 60 years, and barred immigrants already here from becoming naturalized citizens or having their spouses join them (Garcia, Flores, and Ehrlich 2004). The study area includes the site of what is considered one of the most savage and brutal events involving Chinese immigrants. The Los Angeles Massacre of 1871, which began with a quarrel between two Chinese who shot at each other, escalated into a violent riot when a white spectator was accidentally killed by the gunfire. Homes and businesses were looted and 19 Chinese were killed in the riot (CDPR 1988). The location of the riot is within the study area, near the site of the El Pueblo.

By the first decade of the twentieth century, California's economy was fueled almost entirely by southern California oil, while the rest of the nation continued to use coal.

Discriminatory practices also had a significant effect on Hispanic communities. During this period Mexican-era landowners were forced to go through lengthy legal processes to prove their land ownership (Land Act of 1851). Judges were often unfamiliar with the Mexican land tenure system on which the land grants were based. The process of establishing existing claims and newly imposed land taxes bankrupted many Californios (Mexican land grantees) and eroded their economic base. Many were only able to obtain poorly paid jobs as laborers. The pattern of dislocation from losing land, ensuing neighborhood segregation, declining political influence, and discrimination created many challenges for the Hispanic community in Los Angeles during this time (CDPR 1988).

Many prominent Pobladores who founded El Pueblo in 1781 were of African descent. Francisco Reyes, for example, served as mayor of El Pueblo in 1873. Later, a number of African Americans settled in California after it was declared a free state with the Compromise of 1850. Some also came as slaves but were later emancipated. Biddy Mason, who came to California as a slave in 1851, was emancipated with legal assistance from the black community in Los Angeles, when her owner tried to leave with her for Texas. Biddy Mason went on to become a successful businesswoman in Los Angeles. Mason's former homesite, located on Spring Street just south of El Pueblo, is now Biddy Mason Park (CDPR 1988, Garcia, Flores and Ehrlich 2004).

Oil Development

Energy was a precondition of southern California's successful economic development which at first posed a limitation. Although the Sierras had numerous streams of falling water to supply hydraulic power to the gold miners, most of the state was too far removed from this source of energy to take advantage of it. Where hydraulic power was absent, nineteenth century industry was accustomed to rely on steam, which was produced through the burning of either wood or coal. The eastern United States had abundant supplies of both, but these fuels were scarce and expensive in California. A local source of inexpensive fuel was therefore highly desired. This interest explains the enthusiasm which accompanied the discovery of oil in the early 1860s. In southern California, much of this activity took place around the natural oil springs and seeps of Pico Canyon along the northern slope of the Santa Susana Mountains.

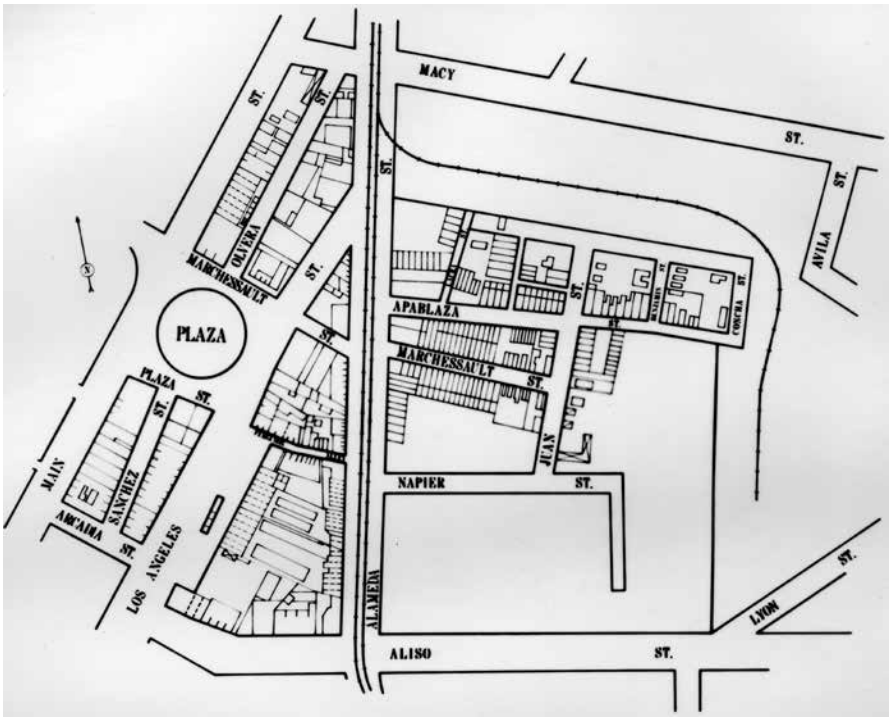


Well No. 4 in Pico Canyon near Newhall was the first commercially successful oil well in California. The Oilmen's Hotel, shown above in 1961, was built ca. 1880 to house oil men. Photo: NPS.

By the first decade of the twentieth century, California's economy was fueled almost entirely by southern California oil, while the rest of the nation continued to use coal. California's average per capita oil consumption was about twenty-eight barrels, compared to a national average of two. For the next forty years, southern California would remain energy self-sufficient and even export oil and natural gas to other regions. Oil would help tie the entire region together and support the early development of a transportation system based predominantly on highways and automobiles. The individual mobility which these technologies made widely available would facilitate the recreational development of the mountains surrounding Los Angeles where road houses, weekend retreats and summer camps proliferated during the early twentieth century (Williams 1996, White 1970, White 1968).

Overcoming Isolation (1876-1900)

The Butterfield Overland trail, created by the United States Congress on March 3, 1857 and operated until June 30, 1861, closed the travel gap between California and the Mississippi Valley. The route entered California at Fort Yuma, Arizona stretching into Mexico before re-entering the United States near the New River. From Los Angeles, the stage crossed Cahuenga Pass into the San Fernando Valley, stopping at Los Encinos (present Los Encinos State Historic Park) on the northern foot of the Santa Monica Mountains. It then turned north again to leave the San Fernando Valley







The map above depicts the location of the original Chinatown to the east (to the right on the map) of Alameda Street. This area was demolished in the 1930s to make way for Union Station. The upper right photo shows the Garnier Building at 415 North Los Angeles Street which was part of the old Chinatown and now houses the Chinese-American Museum within El Pueblo de Los Angeles Historical Monument. To the north of the Plaza was a predominently Mexican-American neighborhood dating from the 1850s (shown in the lower right photo ca. 1890s) which became the site for the New Chinatown. Photos: Security Pacific National Bank Collection/Los Angeles Public Library.

through San Fernando Pass (Newhall Pass) by way of Beale's Cut. After crossing the Tehachapi Mountains, the stage continued on an inland route through the San Joaquin Valley to its terminus at San Francisco (Bevil 2007, Conkling and Conkling 1947, Hafen 1923).

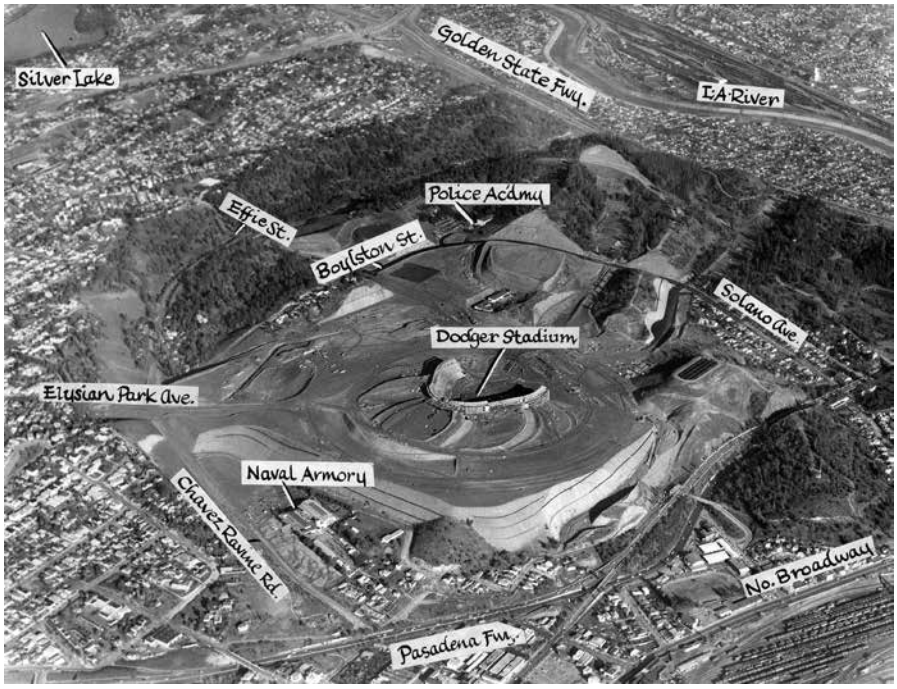
Although the Butterfield Trail helped to close the travel gap between the Mississippi Valley and California, the changes that would eventually transform Los Angeles into a modern metropolis began with the arrival of the first transcontinental railroads bringing waves of immigrants, land speculators, and entrepreneurs. The Southern Pacific Railroad reached Los Angeles from San Francisco in 1876, connecting southern California indirectly to the rest of the nation. This was followed in 1885 by the Atchison, Topeka and Santa Fe Railway's (Santa Fe Railway's) direct transcontinental line, which followed a more southerly route and resulted in the city's first major population boom (Scott and Edward 1998). Not long after the arrival of the railroads facilitated overland travel, work began on harbor improvements to facilitate maritime transportation.

After 1884, Los Angeles was dramatically transformed, both in size and character. One of the largest land booms was precipitated by the arrival of the Santa Fe Railway. Population increased from 15,000 to 790,000 during the next thirty years. With the collapse of the pastoral economy, most of the Mexican-era landholdings passed to Anglo-American owners, who were interested in developing the land for commercial purposes, often as tourist inns or other recreational attractions. Others were interested in subdividing and selling the land in small agricultural or residential parcels. All of these owners needed more people, and they actively encouraged new immigration.

Southern California soon began promoting its climate and lifestyle throughout the nation. During the 1893 Columbian Exposition in Chicago, southern California established a prominent exhibit where it heavily marketed the benefits of the mild climate for health and agriculture. The exhibit even included a citrus orchard. New settlers came from the east coast and midwest in search of better health and agricultural opportunities. Fine homes and public buildings began to emerge throughout Los Angeles. The former Governor of Alta California, Pio Pico, constructed Pico House which was to serve as a first class hotel to impress the new settlers. Real estate agents were known to wait at train stations.







Chavez Ravine, as shown in the top photo in 1952, was a vibrant Latino community northeast of downtown Los Angeles. In the 1950s, the Housing Authority of the City of Los Angeles, with plans to redevelop the area, condemned properties in Chavez Ravine. Community members and supporters protested the condemnation. The lower right photo (1959) shows a World War II veteran protesting with his aunt, who displays his Purple Heart and Bronze Star medals. Eventually, Dodger Stadium was built in the ravine (lower right photo). Top Photo: Leonard Nadel, Housing Authority Collection/Los Angeles Public Library. Lower Photos: Herald-Examiner Collection/Los Angeles Public Library.

Many homes were constructed in a wide range of architectural styles popular at the time. Such styles included Monterey, which featured adobe walls and second floor wooden balconies, Italianate, Greek Revival, Romanesque, and Spanish-Colonial Revival. This period also saw the emergence of the regionally adapted California bungalow which stayed warm in the winter and cool in the summer (Kaplan 1987).

Early Twentieth Century Growth and Development (1901-1939)

Rapid growth continued in the twentieth century, supported by the nascent film industry, the importation of water, abundant oil, and the evolution of the world's largest interurban transportation system, the Pacific Electric Railway which connected cities throughout the Los Angeles area. Another wave of immigration to southern California began in the 1920s. These events would ultimately transform the region from a sparsely populated, largely rural Hispanic settlement, to a predominately Anglo-American metropolis by the middle of the twentieth century.

During this time several ethnic enclaves emerged in and around the study area, largely



Warner Bros. National Picture studio was built along the Los Angeles River in the San Fernando Valley. This image, looking north towards the Santa Susana Mountains, was taken in 1924. Photo: Security Pacific National Bank Collection/Los Angeles Public Library.

Movie production companies were eventually drawn to the Los Angeles area by the mild climate and wide range of landscapes and architectural styles all of which could depict many settings (urban, suburban, rural) and locales.

as a result of exclusionary laws and zoning. Although such enclaves somewhat marginalized groups from the larger social sphere, they also reinforced a local cultural experience distinct to those places. The original Chinatown, which was located just south of the new Los Angeles State Historic Park, was destroyed in the 1930s to make way for Union Station. Residents relocated just north of the area to form today's vibrant Los Angeles Chinatown. By 1910, Los Angeles had become the most populous Japanese settlement in California which remains to this day. This community formed what is now Little Tokyo Historic District, located just south of the study area in downtown Los Angeles. Chavez Ravine was a vibrant Latino community that was dislodged in the 1950s for construction of what is now Dodger Stadium. African Americans who had been part of the original pueblo settlement were slowly pushed out of the El Pueblo area and began concentrating in southern Los Angeles (Garcia, Flores, and Ehrlich 2004; CDPR 1988).

Population change would also shift the political balance of power within the state as a whole from San Francisco in northern California to Los Angeles. Southern California would also become a leading innovator in new technologies and engineering solutions which provided essential resources for regional economic development but also dramatically transformed the natural environment.

Film Industry

Although the film industry originated on the east coast and in Chicago, movie production companies were eventually drawn to the Los Angeles area by the mild climate and wide range of landscapes and architectural styles all of which could depict many settings (urban, suburban, rural) and locales. Production companies were also enticed by inexpensive land available at the time. Film companies first began to locate in Los Angeles in 1907. At the time electric power was very expensive and sunlight was primarily used to develop film. In eastern locations, rain and snow would halt film production. The Los Angeles Chamber of Commerce capitalized on this factor and actively lobbied filmmakers beginning in 1909, boasting 350 days of sunshine. By 1920, roughly 100,000 residents were employed in the film industry (Kaplan 1987, Bible, Wanamaker, and Medved 2010).

The first permanent film studio was established in 1909 by William Selig and Francis Boggs (Polyscope Company). Many new studios followed suit, initially established in the Echo Park and Silver Lake neighborhoods and later in Hollywood. The eastern Santa Monica Mountains were used early on for location filming. Popular sites included Bronson Canyon, Runyon Canyon, Griffith Observatory, Hollywood Bowl, and the Hollywood Hills. The industry also moved to Malibu in 1926, establishing the Malibu Beach Motion Picture Colony (Kaplan 1987; Bible, Wanamaker, and Medved 2010). The Santa Monica Mountains and San Fernando Valley's ranches and inexpensive land also attracted major studios. Paramount Ranch, established in 1927 in what is now Santa Monica Mountains National Recreation Area, is one of the best remaining examples of a movie ranch from this era. Additional locations within the study area also

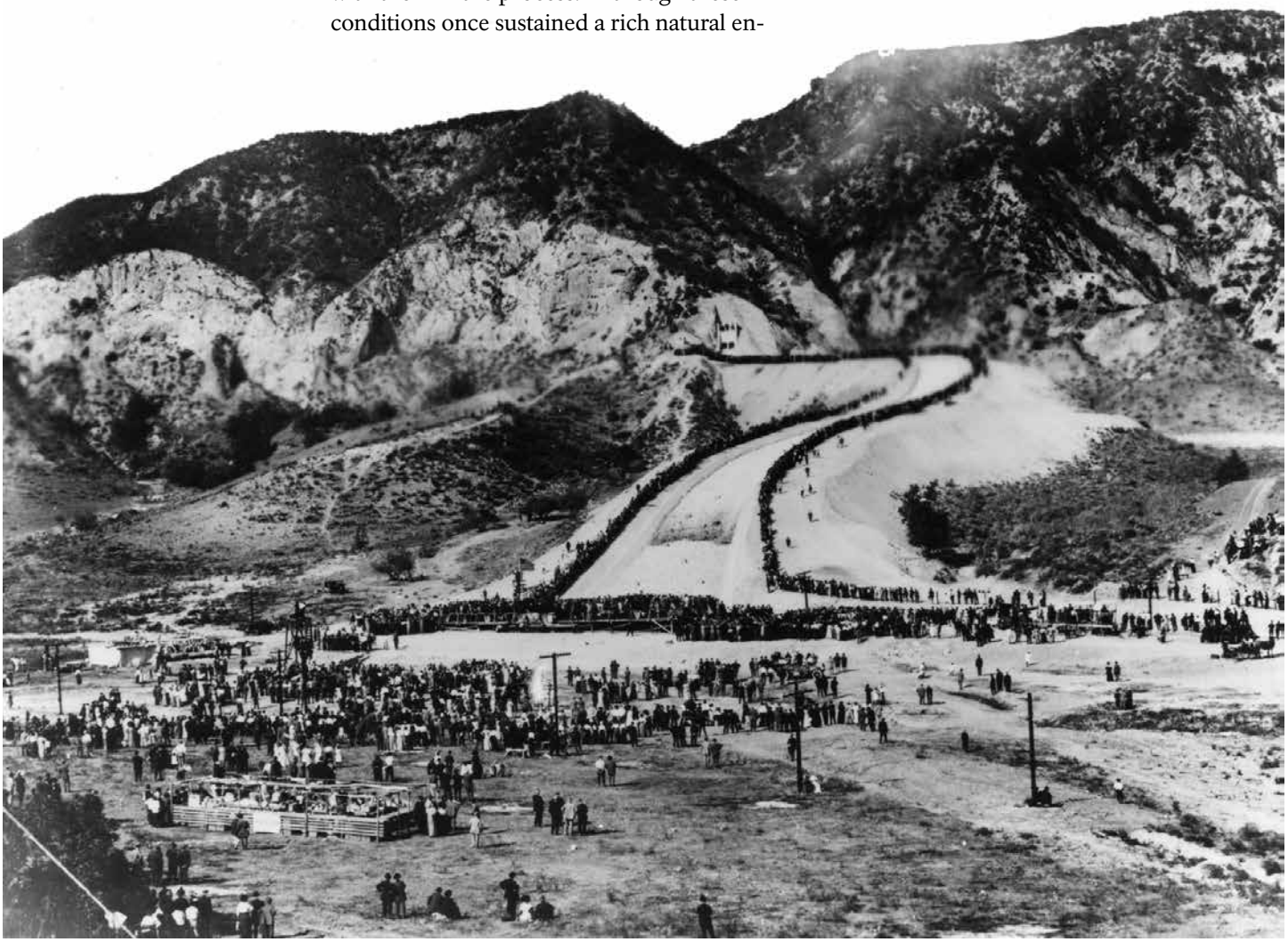
attracted film production companies. Porter Ranch, a 500-acre site in the Santa Susana Mountains, was heavily used for filming, as was Iverson Ranch in Chatsworth, Corriganville in the Santa Susana Pass area, and Ahmanson Ranch in Upper Las Virgenes Canyon (Bible, Wanamaker, and Medved 2010).

The Re-Engineering of Los Angeles

The dramatic growth of Los Angeles in the late 19th century drew increasing attention to its need for more water and the need to control the superfluity during the seasons when there was too much water. Inadequate water supply was among the most significant resource limitations which southern California faced. The arid region has an average annual rainfall of only 13 to 20 inches. Much of this precipitation falls in isolated winter downpours, creating floods which quickly drain down steep mountain slopes, moving a considerable amount of erosional sediment with them in the process. Although these conditions once sustained a rich natural environment, they posed significant obstacles to the city that was eventually built here. In 1902, Los Angeles residents voted to grant the city authority to manage and develop its water resources. At that time, the Los Angeles population numbered approximately 160,000, while city engineers estimated that existing water resources were sufficient to support a population of no more than 250,000. At the city's current rate of growth, municipal leaders estimated that Los Angeles would exceed its local water supply within five years, and they began to look for other sources of water beyond the Los Angeles River watershed for the first time. The alternative of not growing beyond the limits of what local resources could support was not considered.

Los Angeles Aqueduct

In 1904, William Mulholland, the superintendent of the city's newly created water bureau, publicly announced his intentions to bring



In 1913, a celebration event marked the delivery of the first water to Los Angeles via the Los Angeles Aqueduct. The aqueduct continues to convey water from the Owens Valley in eastern California to the City of Los Angeles. Photo: Security Pacific National Bank Collection/Los Angeles Public Library.

supplemental water to Los Angeles from the Owens Valley, a watershed located more than 230 miles northeast of Los Angeles on the western edge of the vast Great Basin. It would be one of the first major inter-basin water transfers in the nation's history and would artificially alter the natural resource base of Los Angeles for the remainder of its modern history. William Mulholland began surreptitiously buying land alongside the Owens River until the City of Los Angeles owned most of the riparian parcels and much of the rest of the valley. In 1905, the plan to build the Los Angeles Aqueduct from the Owens Valley to Los Angeles was publicly announced. The resident farmers and ranchers of the Owens Valley violently opposed the construction of the aqueduct, but there was little they could actually do to stop it. The Bureau of Reclamation and President Theodore Roosevelt endorsed the project in the interest of the larger public it would ultimately serve in Los Angeles as opposed to the relatively small population of the Owens Valley (Hundley 1992, Kahrl 1982).

The Los Angeles Aqueduct was constructed over a period of five years, from 1908 to 1913. The terminus of the aqueduct was at Sylmar on the north side of the San Fernando Valley. The water exited the pipeline through gates located part-way up the slope of the foothills and cascaded down a steep, concrete-lined canal—known aptly enough as "The Cascades"—to a storage reservoir located on the valley floor into the Los Angeles Reservoir, now known as Van Norman Lake. With the arrival of abundant water from the newly completed aqueduct, the value of land rose dramatically. The San Fernando Valley was incorporated into Los Angeles and began developing rapidly. Within a decade of the aqueduct's completion, the city's population went from approximately 500,000 to nearly one million (Hundley 1992).

During the intervening years, larger storage reservoirs were also constructed in or near Los Angeles to increase the long-term capacity of the system. The Saint Francis Dam, located north of the study area in San Francisquito Canyon, collapsed in March 1928, killing more than 400 people. Thousands of buildings were also destroyed in towns and farmlands located downstream within the Santa Clara Valley. It was one of the worst disasters involving a man-made structure in the nation's history (Hundley 1992). By 1940 a second aqueduct that drew water from the Mono basin, a separate watershed north of the Owens Valley, was completed to supply additional water to the rapidly growing city.

Colorado River Supplements

In 1924, William Mulholland successfully lobbied Congress for a share of the Colorado River in anticipation of the pending Boulder Canyon Act, which would authorize the construction of Hoover Dam in 1928. That same year, southern California cities united to form the Metropolitan Water District (MWD) in order to improve regional planning and increase the influence of local lobbyists. In 1931, MWD voters approved a $220 million bond to fund construction of an aqueduct from the Colorado River, and work began shortly afterwards on Parker Dam, which impounded Lake Havasu, and diverted water through a 242-mile aqueduct to southern California. The entire system was finished and operating by 1941 (Hundley 1992).

State Water Project

Growth subsidized by imported water eventually created the need for still more water. In 1960, southern California voters overwhelmingly supported a state-wide bond measure to construct the State Water Project, an elaborate system of dams, reservoirs and aqueducts designed to transfer water from the humid north to the arid south. The California Aqueduct extended 444 miles from the San Francisco Bay Delta south as far as Lake Perris, a storage reservoir located near the city of Riverside. A western spur of the California Aqueduct brought water to Castaic Lake, in the Sierra Pelona.

Flood Protection

Controlling water was as important to the urbanization of Los Angeles as importation of water from other regions. Despite the generally arid climate, floods occur in Los Angeles with periodic regularity, if not frequency. These events are the result of storms which can drop as much as thirteen inches of rain, sometimes more, in a matter of days. When this happened, much of the Los Angeles basin, and associated valleys, can become inundated in water or buried under mud and debris washed down from the encircling foothills.



The winter storms of 1913-1914 resulted in floods and loss of property near waterways, such as this home constructed along the banks of the Los Angeles River. Photo: Los Angeles Public Library.

The Los Angeles basin is essentially a vast alluvial fan, or upland delta, created over millennia by successive storms depositing sediments eroded from the steep mountain slopes onto the valley floors and coastal plain below. The rivers which flow through this basin—the Los Angeles, San Gabriel, the Rio Hondo, and the Santa Ana, as well as numerous smaller streams—had no permanent channels but instead wandered considerable distances from one side of the basin to another establishing entirely new channels after major floods.

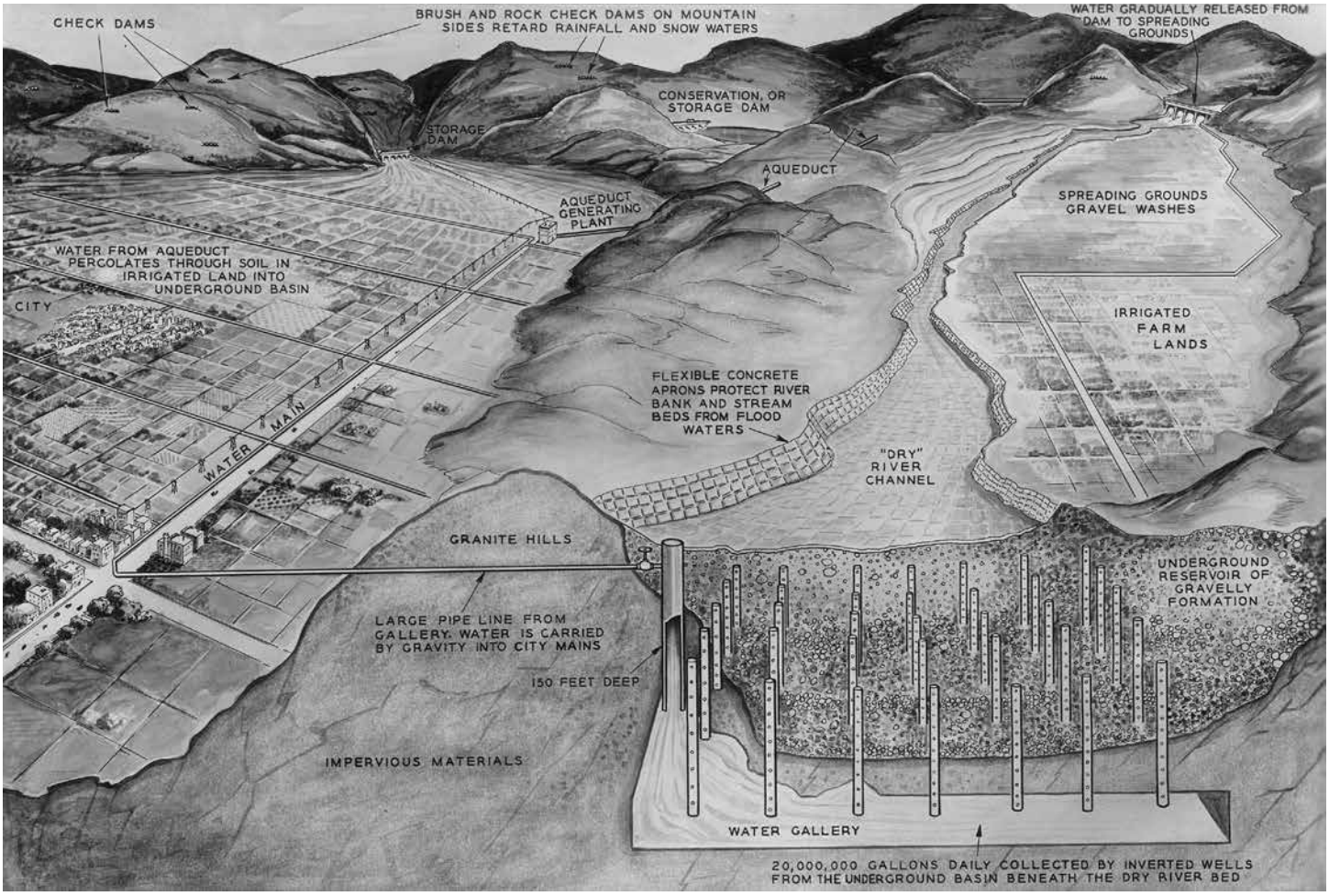
The Native Americans and early colonists were largely unaffected by the floods which occasionally inundated the region. The few buildings constructed during the Spanish and Mexican periods were located on high ground—or were soon moved to high ground—while the agricultural or pastoral basis of their economy benefitted from the introduction of nutrients brought down with the flood waters without suffering any significant destructive effects from the flooding itself. This benign relationship to the periodic occurrence of storms and floods would continue well into the American period. In 1884 when southern California experienced a flood that inundated most of the Los Angeles basin, it was greeted with amusement, if not outright gratification for the improvement of soil quality that would result in greater agricultural production (Orsi 2004, Fogelson 1967).

Over the following years, the outlines of the modern city of Los Angeles were established and much of its essential infrastructure was built. Unfortunately, the pattern of this early infrastructure was laid during an atypically static moment in the region's otherwise dynamic climatic history and was therefore built on a mistaken assumption that the present natural regime would remain unchanged into the future. Nothing could be further from the truth. During the winter of 1913-1914, rains fell in a concentrated deluge, and the valleys filled with sediment and debris as they had in the past. However, unlike past floods, this one caused considerable damage and loss-of-life, not because it was greater in magnitude but because now there was more to destroy. Instead of relocating vulnerable infrastructure, or moving the young city out of the floodplain on which it was built, city leaders contemplated how to re-engineer the floodplain itself so that its natural dynamics would pose less of a threat to the city which lay upon it. For the next two years, a board of engineers was convened by the county to study the 1914 floods and propose recommendations to prevent or mitigate future disasters of this kind (Orsi 2004).

Local Flood Protection Efforts

In June of 1915, the Baker Bill was passed, establishing the Los Angeles County Flood Control District (LACFCD). Over the next two decades, a number of comprehensive plans for flood control were devised. Portions of these plans, including small check dams in the mountains, channelization of rivers and streams through the cities, spreading grounds on the valley floors, and flood control basins (broad, shallow reservoirs that would remain empty until flood waters arrived) were built and formed the basis of subsequent flood-control development. An early proposal to build high dams in the San Gabriel Mountains was abandoned following the St. Francis Dam disaster and delays due to scandalous contracts (Orsi 2004).

In late December 1933, more than three decades of relatively dry conditions came to a sudden and dramatic end when fourteen inches of rain fell in only two days. The floods



Following devastating floods of the 1930s, a countywide flood control strategy for Los Angeles County. was created. This 1938 newspaper graphic illustrates the flood control system and network of dams, groundwater basins, etc. designed to work together to control flood water and augment groundwater supplies. Image: Herald-Examiner Collection/Los Angeles Public Library.

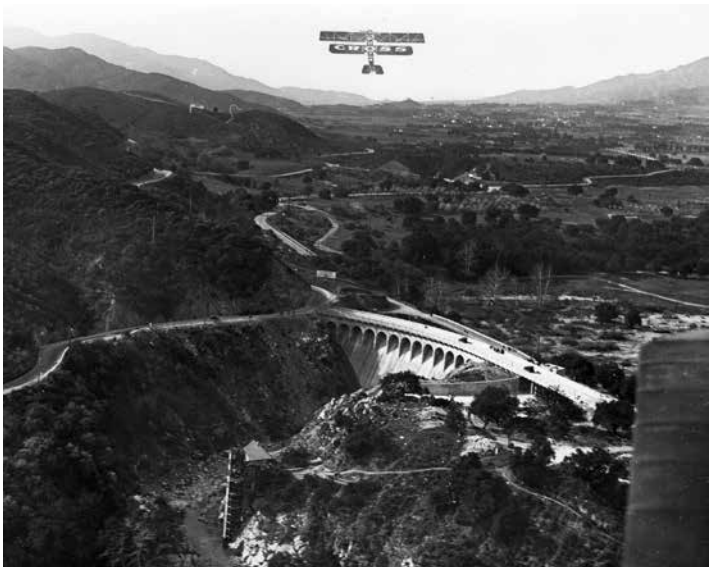
In late December 1933, more than three decades of relatively dry conditions came to a sudden and dramatic end when fourteen inches of rain fell in only two days. The floods on New Year's Day of 1934 damaged or destroyed hundreds of homes and claimed more than forty lives, illustrating the inadequacy of existing flood control measures.

on New Year's Day of 1934 damaged or destroyed hundreds of homes and claimed more than forty lives, illustrating the inadequacy of existing flood control measures. Despite the obvious need for new solutions, however, voters refused to fund a new plan, largely in response to the previous dam scandals and Great Depression, which was at its nadir when new bond measures were proposed. The same political and economic environment which discouraged local investment in capital improvements, however, supported greater federal intervention by agencies such as the U.S. Army Corps of Engineers. The Corps' involvement after 1935 represented a decisive shift away from localism in the management of natural resources toward greater federalism (Orsi 2004, McPhee 1989, Turhollow 1975).

Federal Assistance for Flood Control Engineering

Under an emergency relief appropriation made through President Roosevelt's Works Progress Administration (1935) and the national Flood Control Act (1936), the U.S. Army Corps of Engineers (and other federal agencies) constructed civil engineering projects such as dams, levees, dikes, etc. for the purpose of mitigating or preventing the destructive impacts of natural floods. Los Angeles County was the first region to be designated for funding under the act, since the county already had a comprehensive plan ready for implementation. Approximately $70 million was eventually appropriated under the act for projects on the Los Angeles, the San Gabriel, and the Rio Hondo Rivers (Orsi 2004).

In the three decades to follow, the U.S. Army Corps of Engineers would construct more than 30 small debris basins on canyon mouths at the foot of the mountains, construct three large flood control basins on the Los Angeles River, pave approximately 48 miles of river channel, and construct more than 100 bridges. It would also construct two large flood control basins on the San Gabriel River, pave nearly 150 miles of that river's channel, and build more than 200 bridges. Similar improvements



Built in 1920, Devil's Gate Dam in the Arroyo Seco in Pasadena was the first dam in what would become an extensive flood control system built by the Los Angeles County Flood Control District. Photo: Cross Aerial Photos, Security Pacific National Bank Collection/Los Angeles Public Library.



This 1948 image shows the US Army Corps of Engineers' open-air hydraulics laboratory in Griffith Park. The structures shown were built to model the Los Angeles River and proposed flood control facilities. Photo: Herald-Examiner Collection/Los Angeles Public Library.

were made within the Ballona Creek watershed southeast of the Santa Monica Mountains. The total cost for all of this work by the end of the initial period of development was more than $440 million, but would later come to more than $2 billion with supplemental improvements. It represented one of the largest public works projects in history and would completely alter the hydraulic landscape of the Los Angeles basin (Turhollow 1975, Orsi 2004).

It should also be noted that local, state, and federal agencies and local organizations have worked collaboratively in recent years to explore opportunities to revitalize the Los Angeles River, restoring habitat and creating recreational amenities while continuing to provide for flood protection. The U.S. Army Corps of Engineers is conducting a study that evaluates opportunities to re-engineer an 11-mile stretch of the Los Angeles River within the study area to provide more habitat and recreational value. Implementation of such proposals would greatly transform the river as it extends from Glendale Narrows to the confluence with the Arroyo Seco.

Highway System Development

The automobile had a significant impact on modern settlement patterns of the greater Los Angeles metropolitan area. Just twenty years after the Los Angeles Region completed the world's largest interurban transit system, the automobile emerged as the primary mode of transportation. By 1924, Los Angeles had the highest percentage of car ownership in the world. The region was well suited for automobiles because the mild climate meant unpaved roads could be driven on year-round (Fogelson 1967).

Following the popularization of the automobile by the early twentieth century, major highways were constructed which further dissolved the isolation of distance. One of the nation's first transcontinental highways—Route 66—terminated at Santa Monica. These ambitious new technologies allowed people and wealth to flood into the region.

Recreation and Tourism

With the arrival of the transcontinental railroad in the late 19th century, Los Angeles began to widely promote the area's mild climate which afforded many health and tourism opportunities. With year-round outdoor recreation possible, many areas developed facilities to provide recreational opportunities. The late 1800s saw a rise in popularity of hiking as a recreational activity. Hiking was inexpensive, allowing individuals from all social classes and economic backgrounds to participate in what was early on recognized as a great source of exercise and enjoyment. The San Gabriel and Santa Monica Mountains provided an endless amount of trails wandering through scenic mountain passages and quickly became prime destinations. The Pacific Electric Railway, established in 1901, expanded various lines with-



In the fall of 1936, a group of young men including Rudolph Schott, Apollo Milton Olin Smith, Frank Malina, Ed Forman and Jack Parsons conducted the first rocket tests at the Jet Propulsion Laboratory. These tests were conducted in the Arroyo Seco next to the present day site of JPL. Photo: JPL/NASA.

By the end of the war, southern California would be an important center not only for advanced aeronautical design, but also for rocketry and guided missile technologies.

in easy walking distances of numerous San Gabriel mountain trail heads and to coastal beaches. The introduction of the automobile inspired the construction of scenic roads and byways such as the Pacific Coast Highway, the Arroyo Seco Parkway, Mulholland Drive, and the Angeles Crest Highway. Wealthy Los Angeles residents purchased large "pleasure ranches" in the Santa Monica Mountains. Purchase of these tracts for leisure and recreation kept much of the mountains undeveloped and many such lands have since been conserved by federal, state, and local park agencies.

War and Urban Transformation (1940-Present)
During the 1940s, the region would go through another dramatic change as defense-related jobs associated with World War II would cause the population to swell yet again, but this time with a far more diverse demographic. Post-war immigration continued to fuel growth in the region while highway construction spread out development. The area continued to diversify and saw important social movements in labor, civil rights, and conservation.

Aerospace and Cold War Research and Industry

World War II would have other important implications for the development of southern California, attracting substantial federal subsidies for research in new technologies with potential military applications. Chief among these was aeronautics, which already had a substantial foundation in the region as a result of the many early pioneers of aircraft design and production—such as Lockheed, Douglas Aircraft, and North American Aviation—which had located here to take advantage of the favorable weather conditions which made it possible to fly at nearly any time of the year. These companies would be supported by the research of local universities such as the California Institute of Technology (Caltech), which operated a special laboratory dedicated to aeronautical engineering. The precedent which was established by this relationship between theoretical research and practical development proved extremely fruitful, especially when it was encouraged by generous federal funds.

By the end of the war, southern California would be an important center not only for advanced aeronautical design, but also for rocketry and guided missile technologies. As World War II ended, the world entered what has become known as the Cold War—a term that financier and presidential advisor Bernard Baruch first used in a speech on April 16, 1947, to describe the increasingly chilly relations between the Soviet Union and the United States. The United States as well as the Soviet Union created a vast infrastructure to support a complex of offensive and defensive weapons systems during the Cold War. This infrastructure included facilities and sites for developing, testing, manufacturing, and storing weapons; expanded military installations for use as staging and training centers; a network of defensive radar and communications stations; and a host of command and control centers. These military technologies (as well as Cold War politics) would contribute to the development of the American space program, and southern California would play a crucial role in these activities as well.

Jet Propulsion Laboratory (JPL)
The Jet Propulsion Laboratory (JPL) played a significant role in Cold War and rocketry. JPL originated in the early rocketry experiments of Frank Malina, a graduate student of Dr. Theodore von Kármán, who was a professor of engineering at the California Institute of



This newspaper photo shows Rocketdyne employees filming a movie of their rocket engine testing at what is now Santa Susana Field Laboratory. The caption, dated June 13, 1963 reads, "Film crew moves up on a Rocketdyne static test - Canoga Park aerospace firm has produced 500 motion pictures". Photo: Valley Times Collection/Los Angeles Public Library.

"Santa Susana's Bowl Area" was the first liquid-fuel, high-thrust rocket engine test facility in the continental United States with multiple, permanent test stands.

Technology (CIT or Caltech) in Pasadena and the director of the school's prestigious Guggenheim Aeronautical Laboratory (GALCIT) from 1926. The original GALCIT experiments were conducted on a shoe-string budget and usually took place in the wide sandy wash of the Arroyo Seco where it exits the San Gabriel Mountains near La Cañada Flintridge. The site is now occupied by the vast, campus-like facility of the present JPL. Malina's work represents some of the earliest systematic research on rocketry in the United States.

Although Kármán and his students were primarily interested in basic research—designing rockets to investigate the upper atmosphere and possibly extraterrestrial space—the U.S. Army soon recognized the military potential of their efforts. The outbreak of World War II and the Nazi's militarization of the far-more advanced German rocket program soon led the U.S. Department of Defense to support similar research in this country, and Kármán's fledgling rocketry program at GALCIT would eventually receive substantial Department of Defense funding for small, solid-fuel rocket boosters and later, long-range guided missiles. The GALCIT rocket scientists began referring to themselves at this time as JPL.

Toward the end of the 1950s, JPL began working on a number of non-military rocketry projects. In 1958, JPL produced Explorer I, the first U.S. satellite to orbit Earth. Later that same year, the National Aeronautics and Space Administration (NASA) was established, marking the formal beginning of the nation's civilian space program. JPL's contractual obligations to the U.S. Army were immediately transferred to NASA, and the laboratory assumed an entirely new mission, assisting NASA with the development of unmanned planetary and deep space research vehicles. Among the earliest of these ventures were the Pioneer probes, which made lunar flybys, and the numerous Ranger and Surveyor missions, unmanned lunar landers which helped prepare the way for the manned Apollo flights which followed. After these early lunar missions came the Mariner and Voyager deep space probes, the two Viking Mars landers, and the later Pioneer missions. In addition to playing an important role in developing all of these lunar and deep space vehicles, the Jet Propulsion Laboratory has had the primary responsibility for tracking and monitoring their data transmissions through its Deep Space Network.

North American Aviation and the Santa Susana Field Laboratory

By the end of World War II, the U.S. Department of Defense had committed itself to the development of rocketry and guided missiles, recognizing that this new technology would inevitably comprise an integral part of the nation's future military forces.

In 1947, North American Aviation (later Rocketdyne) selected a site in the Simi Hills for construction of large rocket-testing stands. The first test stand was completed in 1949. It was located within a natural, bowl-shaped depression of the rocky topography of the Simi Hills in what was referred to as Area I. Company histories describe "Santa Susana's Bowl Area" as the first liquid-fuel, high-thrust rocket engine test facility in the continental United States with multiple, permanent test stands. A new complex would include four clusters of three Vertical Test Stands—twelve in all—each with accompanying blockhouses for observation and a workshop facility, or Component Test Laboratory, as well as associated utilities. These sites were given the sequential names Alfa, Bravo, Coca, and Delta.

Rocketdyne also went on to support rocket engine development that would eventually be



In 1941, President Franklin Delano Roosevelt signed Executive Order 9066 forcing Japanese Americans into temporary detention camps or relocation centers. Above, Japanese Americans are shown boarding buses in March, 1942 at Maryknoll School in the Little Tokyo district of Los Angeles. Little Tokyo is now a national historic landmark district. Photo: Herald-Examiner Collection/Los Angeles Public Library.

Although World War II brought additional industry and wealth to the region through the defense industry, it had a negative impact on Japanese Americans who were forcibly removed from their homes to live in relocation centers or internment camps following the attack on Pearl Harbor in 1941.

used to launch JPL's Explorer I satellite. Immediately following the successful launch of the Explorer I satellite, the newly-established National Aeronautics and Space Administration (NASA) committed itself to developing a manned mission to the moon. In 1961, NASA contracted with Rocketdyne to develop its Saturn rocket engines, which would be used in the Apollo program.

By 1969, NASA had begun planning on the Space Shuttle. In 1971, it awarded Rocketdyne the contract to develop the Space Shuttle Main Engine. Static fire testing would continue at SSFL throughout the 1980s and 1990s in support of NASA's space program, but during the following decade the test facilities at SSFL were gradually deactivated. The last engine tests were conducted at the Alfa site in 2006.

Nuclear Energy Research

Southern California was host to one of the earliest nuclear reactors to be constructed in the United States for the purpose of providing a civilian energy source. This was done on an experimental basis rather than for full-scale production, but the project contributed valuable technical knowledge and experience toward the development of civilian power reactors. The Sodium Reactor Experiment (SRE) conducted at the Santa Susana Field Laboratory was developed to test the feasibility of a high-temperature, liquid sodium-cooled, graphite-moderated reactor for electrical power generation. This was one of several alternative reactor designs being tested simultaneously around the country with the encouragement and support of the Atomic Energy Commission in response to President Eisenhower's "Atoms for Peace" initiative (Parkins 1955, Hewlett and Holl 1989, Sapere Consulting, Inc. and Boeing Co. 2005).

In 1957, Shippingport became the first civilian nuclear power plant in the United States to initiate full-scale power production, supplying more than 12,000 kilowatts of electricity to the local grid. Several months earlier, however, the SRE at Santa Susana provided electrical power to the nearby city of Moorpark, though on a more limited, demonstration basis. Although this was not the first example of an American city being powered by nuclear-generated electricity—that distinction goes to the small town of Arco, Idaho, which was briefly electrified two years earlier by a military reactor from the National Reactor Testing Station—it was the first time this was done by a reactor designed specifically for civilian purposes. In 1959, the SRE may have earned a more dubious distinction by becoming the first civilian reactor to suffer a serious accident when more than a third of its fuel rods overheated and melted through their protective cladding, releasing a plume of radioactive gas into the atmosphere (Lochbaum 2006).

Japanese American World War II Confinement

Although World War II brought additional industry and wealth to the region through the defense industry, it had a negative impact on Japanese Americans who were forcibly removed from their homes to live in relocation centers or internment camps following the attack on Pearl Harbor in 1941. By 1910, Los Angeles was the most populous Japanese settlement in California, and it has remained so to this day. This was in spite of anti-Japanese laws restricting opportunities to lease or purchase land or obtain citizenship. During World War II, Japanese Americans were affected by the most widespread discriminatory action yet when President Franklin Delano Roosevelt signed Executive Order 9066 in 1941 forcing Japanese Americans into temporary

Local, state, and federal agencies and local organizations have worked collaboratively in recent years to explore opportunities to revitalize the Los Angeles River, restoring habitat and creating recreational amenities while continuing to provide for flood protection.

detention camps or relocation centers. Former Civilian Conservation Corps (CCC) Camps, horse tracks, fairgrounds, and rodeo grounds were used for assembly centers where Japanese Americans were gathered and processed then sent to relocation centers or internment camps. In California, relocation centers were established at Manzanar in the Owens Valley and Tule Lake, near the Oregon border. By 1942, all Japanese Americans in the western United States had been detained.

Within the study area, Japanese were initially incarcerated and detained at a CCC Camp in Griffith Park (Camp Riverside) and La Tuna Canyon in Tujunga. Camp Riverside was expanded to accommodate up to 550 persons. The Tuna Canyon Detention Station was also a former CCC camp (La Tuna Camp) and held up to 300 people at once. Approximately 2,500 were processed through this location. Both of these sites have since been demolished. However, the City of Los Angeles recently designated a one-acre area on the site of La Tuna Camp as a city historical-cultural monument (Masumoto 2013a, 2013b). After release in 1945, many Japanese Americans returned to and rebuilt Little Tokyo which today is a national historic landmark (1995).

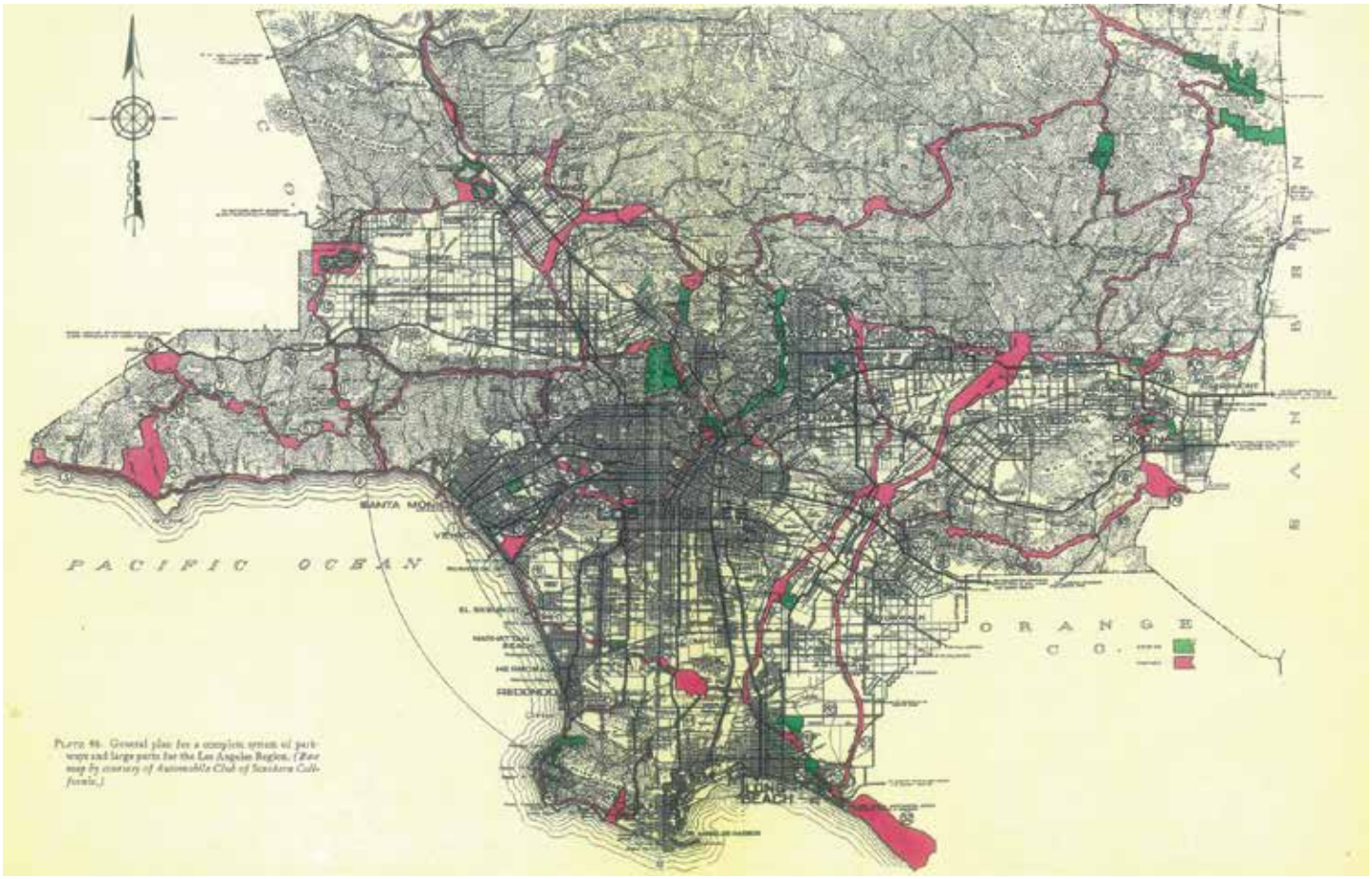
New Paradigm for Flood Protection and Conservation

Beginning in the 1960s, the need for conservation and preservation of natural habitats and floodplains grew, particularly with passing of legislation such as the National Environmental Policy Act of 1969. In evaluating flood system responses to storm events in 1969 and 1978, engineers began to appreciate the cumulative nature of the entire flood protection system, which could multiply the severity of downstream effects many times above the limits for which the infrastructure was designed, even though the direct impacts of the natural event itself were well below those limits. This opened the door for considering other, non-traditional strategies to mitigate flooding such as hazard zoning, which relied on political and social strategies to relocate vulnerable development and dense concentrations of people away from areas of high natural risk (Orsi 2004, National Research Council 1980).

The concept of using parklands and less engineered solutions to provide flood protection had been proposed for the region as early as 1930 in a report commissioned by the Los Angeles Chamber of Commerce. Authored by the nationally prestigious planning firms of Olmsted Brothers and Harland Bartholomew and Associates, the original purpose of the study was to develop a comprehensive public parks and recreation plan. Among its many recommendations (which included preserving the Santa Monica Mountains as parkland), this report suggested that the county purchase broad areas of low-lying land along river drainages and manage these as recreational greenbelts. This would serve the dual purpose of creating more open space for public enjoyment while at the same time providing effective flood protection by preserving natural floodplains and keeping vulnerable development out of them. Despite the simplicity and public appeal of this idea, the proposal would not be implemented because of associated costs and the financial threat it posed to existing property values (Hise and Deverell 2000, Orsi 2004). However, various aspects of this plan would be implemented as a result of later conservation efforts.

Local conservation efforts in the 1960s and 1970s resulted in the designation of Santa Monica Mountains National Recreation in 1978. In the 1980s local groups began to challenge the precedent in the Los Angeles basin of engineering nature away and advocate instead for restoring some floodplains and river channels which could serve as public open space most of the time, while absorbing and mitigating the energy of floods during storm events. One of the earliest attempts to realize this potential in the Los Angeles basin came with the establishment of Friends of the Los Angeles River in 1985 by poet Lewis MacAdams (Orsi 2004, Gottleib 2007).

Through a range of direct action and community organizing, MacAdams increased public awareness of the Los Angeles River, which many Angelenos no longer even knew existed. This and similar community-based environmental advocacy groups would have considerable influence on the City of Los Angeles, which commissioned the Los Angeles River Task Force in 1990 to "articulate a vision for the future of the river." The subsequent *Los Angeles River Master Plan* was released in 1996 by Los Angeles County Department of



A 1930 report titled, "Parks, Playgrounds and Beaches for the Los Angeles Region" prepared by the Olmsted Brothers and Bartholomew and Associates for the Citizen's Committee on Parks, Playgrounds and Beaches proposed a network of "large reservations in mountains, canyons, deserts and islands", and, shown above, a "general plan for a complete system of parkways and large parks for the Los Angeles region." (Olmsted Brothers and Bartholomew and Associates 1930).

Public Works. Departing from past emphasis on engineered solutions to flood control, the new Master Plan considered a variety of alternatives which would include limiting development in areas where natural processes could be restored—for example, as riparian wetlands along segments of the Los Angeles River. The Los Angeles State Historic Park, established in 2001 on a former industrial site near downtown, is one recent example of this new approach to flood management which relies on preserving and restoring open space along natural river corridors instead of building concrete walls. Future development of the park may include restoration of wetlands within the adjacent Los Angeles River channel. Adjacent to Los Angeles State Historic Park on Metropolitan Transportation Authority right-of-way lies an intact segment of the Zanja Madre. This ruin was unearthed by archeologists in 2001 and represents one of the more significant cultural artifacts associated with this resource (Orsi 2007; CDPR 2012, Gottleib 2007).

Associated Resources (American Period)

Numerous historic properties from the American Period are preserved within the study area. Many sites have been listed on local, state, or national historic registers. Resources include excellent examples of architectural styles, Cold War sites, observatories, public institutions, recreation areas, historic ranches, agriculture, highways, aqueducts, and industrial sites. Several sites have been designated national historic landmarks. The sites are organized by theme and topic in *Table D-11: Cultural Resources Related to the American Period (1848-Present)* in *Appendix D*. Several themes have a notable representation of associated resources and are described below.

Agriculture and Ranching

The study area contains two rare intact examples of ranching and agriculture in the twentieth century. Within SMMNRA, the Rancho Sierra Vista Historic District is significant for the period of 1936 through 1947 when it was purchased, developed, and used as a cattle



The Gamble House in Pasadena is designated national historic landmarks representing the theme of residential architecture. The 1908 Gamble House is the most complete and best preserved example of the work of the architects Greene & Greene. Photos: Diane Kane/CalTrans.

The study area contains numerous examples of significant architecture both listed and eligible for listing on the National Register of Historic Places.

ranch by Carl H. Beal. The ranch retains the majority of its acreage, original structures, use, and landscape elements from this period and is consequently one of, if not the, most intact ranches from the first half of the twentieth century in the Santa Monica Mountains and their surrounding foothills.

The Bothwell Ranch in Tarzana isone of the last remaining commercial citrus orchards in the San Fernando Valley which was once a vast agricultural center. Established in the 1920s, it continues to operate today (Architectural Resources Group, Inc. 2013a).

Architecture, Landscape Architecture and Urban Design

The climate and landscape of southern California influenced a wide range of architectural styles. The study area contains numerous examples of significant architecture both listed and eligible for listing on the National Register of Historic Places. Many diverse architectural styles are represented including Mission/ Spanish revival, Modern architecture, Arts and Crafts, and Queen Anne to name a few. Styles of regional distinction include the ranch house and the bungalow (an adaptation of the Indian bangala) (Kaplan 1987). The automobile, whose use flourished quickly in the region also due to the mild climate (early autos did not have heating systems) also influenced regional architecture and urban design inspiring streamline moderne styles and "googie" architecture, eclectic styles employed by restaurants and other businesses looking to catch the attention of auto drivers.

The City of Pasadena boasts one of the most preserved and revered concentrations of Arts and Crafts (1890-1915) and Queen Anne (1880-1900) style architecture in the nation. Los Angeles is also interspersed with works from Frank Lloyd Wright and son Lloyd Wright's most unique and intriguing works. In the Hollywood hills there are many outstanding works of Mediterranean and Spanish Colonial Revival (1870-1940) homes. The types of structures and historic uses represented in the study area include adobes, hotels, ranches, villas, and courtyards.

The study area features two national historic landmarks that represent Arts and Crafts and Modern styles of architecture. The Gamble House National Historic Landmark (1987), located in Pasadena is the most complete and best preserved example of the work of the architects Greene & Greene. Built in 1908, it embodies the highest level of the California Bungalow style associated with the Arts and Crafts movement of the early 20th century (Mackinson 1970).

The Eames House National Historic Landmark is located adjacent to the study area in Pacific Palisades (Historic Resources Group 2007) is associated with the the Case Study House program which was unique in the nation for its concerted efforts to introduce modern domestic architecture to the broader public in the period after World War II.

In 2013, a National Register of Historic Places Multiple Property Documentation Form was submitted for "The Case Study House Program: 1945-1966" (Moruzzi 2013). The nomination included eleven Case Study Houses, ten of which were subsequently listed in the National Register of Historic Places. Eight of these ten houses are located within or adjacent to (within ½ mile) the study area (*Table D-11: Cultural Resources Related to the American Period (1848-Present)* in *Appendix D*).

Recreation

With mild climate allowing year-round outdoor activity, many areas in the region



Rose Bowl stadium, shown above under construction in 1922 was built in the Arroyo Seco canyon of Pasadena. At the time of construction, the Arroyo Seco was still unchannelized and can be seen meandering through the canyon. Photo: Security Pacific National Bank Collection/Los Angeles Public Library.

An interest in the wilderness and outdoors was furthered by the writings of naturalist John Muir. Muir first hiked the San Gabriel Mountains in 1875 where he reveled in the wildlife views, trails, and canyons that the mountains provided (Muir 1894).

developed facilities to provide recreational opportunities. In the Angeles National Forest, recreation flourished in the late 19th century. An interest in the wilderness and outdoors was furthered by the writings of naturalist John Muir. Muir first hiked the San Gabriel Mountains in 1875 where he reveled in the wildlife views, trails, and canyons that the mountains provided (Muir 1894). Historic trails and remnants of the Mount Lowe Railway (part of the Pacific Electric Railway system) that connected residents to the mountains for recreation are located in the national forest.

Recreational areas were also developed in the Santa Monica Mountains. Notably, Griffith Park at 4,300 acres is one of the largest urban parks in the United States. Determined eligible for listing in the National Register of Historic Places, contributing features include Fern Dell, Mount Hollywood, Bird Sanctuary, Griffith Park Observatory and Planetarium, Los Feliz Adobe, Merry-Go-Round, Harding Golf Course Clubhouse, Swimming Pool and Building, Boys' Camp, and Mulholland Fountain (Gonzalez and Anderson 2013).

In the 20th century flood control basins were utilized for recreational purposes. Sepulveda basin and Hansen Dam are both examples of this type of recreational resource.

Amusement parks were also popular in the region, located on beaches and in the mountains. The Santa Monica Pier contains the Santa Monica Looff Hippodrome National Historic Landmark which is a rare example of an early shelter built to house a carousel.

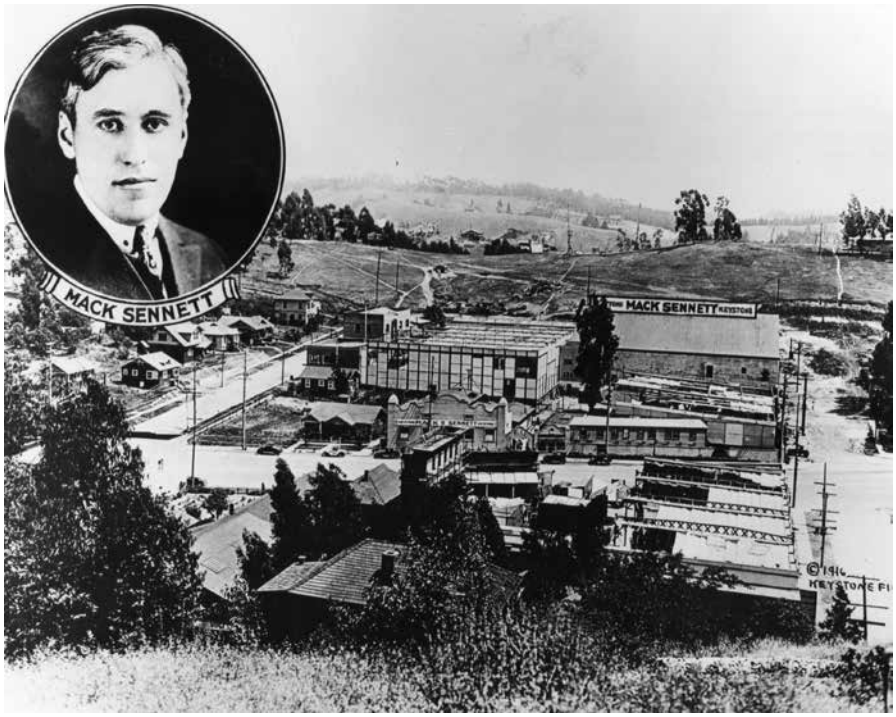
Peter Strauss Ranch in the Santa Monica Mountains is significant for its association with the emergence and popularity of regional amusement and recreation parks in the years following World War II. Lake Enchanto at Peter Strauss Ranch represents an important transition period between exclusive private country clubs and large corporate amusement parks.

The Rose Bowl National Historic Landmark in Pasadena is significant as the site of the oldest and most renowned college football "bowl" game. The Rose Bowl's renown, while linked to college championship football, also has been enhanced by other sports activities, as well as civic, cultural, and political events that have occurred in it. These have included "Super Bowls" of professional football, the cycling events of the 1932 Olympics and some of the soccer events of the 1984 Olympics as well as the 1999 Women's World Cup showdown between China and the U.S. It is now the home of the UCLA football team.

The Rose Bowl Stadium is also part of a larger historic district, the Pasadena Arroyo Parks and Recreation District, which was listed in the National Register at the local level of significance in 2008. The District is significant for its relationship to the parks movement which fostered the preservation of scenic places and the creation of playgrounds and recreation centers (Grimes 2007).

Visual and Performing Arts

Given the region's significant role in television and movie production, there are numerous sites in and around the study area that convey this topic. Sites range from commercial historic districts, movie ranches, and studios to homes associated with famous actors. Paramount Ranch in SMMNRA is held by some historians to be the nation's best remaining example of a film production facility from



Keystone Studios, shown here in 1915, was one of the first film studios in Los Angeles. Located in the neighborhood known as "Edendale" (now Echo Park) and founded by Mack Sennett, the studio was associated with many important actors including Mabel Normand, Charlie Chaplin, Raymond Griffith, Gloria Swanson, Ford Sterling, Andy Clyde, The Keystone Kops, Bing Crosby, and W. C. Fields. Photo: Security Pacific National Bank Collection/Los Angeles Public Library.

Hollywood's 'Golden Era of Motion Pictures.' Also within SMMNRA is the Upper Franklin Canyon Historic District which has been used as a film and television location since the 1930s (GPA Consulting 2013).The Joel McCrea Ranch (listed on the NRHP in 1997) in Thousand Oaks is significant for its association with Joel McCrea, a major Hollywood movie star, whose film career spanned more than forty years and included more than eighty films, such as Sullivan's Travels, The Palm Beach Story, and The Virginian. Will Rogers House (listed on the NRHP in 1971) in Pacific Palisades (and associated state park) is significant for its association with the noted American humorist and motion picture actor. The Hollywood Boulevard Commercial and Entertainment District (listed on the NRHP in 1985) is significant for its connection to the Golden Era of Hollywood which is depicted in this commercial corridor.

Just outside of the study area along the Los Angeles River in the San Fernando Valley is the CBS Studio Lot, one of the first motion picture studios established in the San Fernando Valley. The CBS Studio site was established in 1928 as Mack Sennett's Studioland and CBS continues to use the site for filming today (Historic Resources Group 2013a).

The community of Newhall in the Santa Clarita Valley contains many notable Hollywood movie sets and is the site of the Walk of Western Stars. Some of the relics in downtown Newhall associated with the Western film genre include the Tom Mix cottages, used as housing for the early motion picture industry and the American Theater designed by Charles S. Lee and funded in large part by Actor William S. Hart whose retirement home is within the study area and eligible for listing on the National Register. Other sites include Melody Ranch (aka Placeritos Ranch and Monogram Ranch), built in the early 1920s and owned from 1952 to 1990 by actor Gene Autry and used as a location for hundreds of Western films, television series and commercials; and the Walt Disney Company's Golden Oak Ranch in nearby Placerita Canyon. Griffith Park, in the eastern Santa Monica Mountains outside of SMMNRA, Beale's Cut (Santa Susana Mountains) and Ahmanson Ranch (Simi Hills) were also iconic film location sites.

Science and Technology

The Los Angeles Region has played in an important role in aeronautical and astronomical advances. This is depicted in sites such as the Mount Wilson and Griffith Observatories and range of sites related to the Cold War era (Santa Susana Field Laboratory, missile sites) and space exploration (JPL NHLs).

Astronomy

The Mt. Wilson Observatory in the San Gabriel Mountains was established in 1904 with funding from the Carnegie Institution by American astronomer George Ellery Hale, who also designed the facility and served as its director until his retirement in 1923. George Hale's primary interest was in solar research. Early development at the Mt. Wilson Observatory began with construction of solar telescopes designed specifically for making observations of the sun. Three solar telescopes, still in use today, were constructed, including the 100-inch diameter Hooker reflector. The Hooker reflector was used for some of the most significant astronomical achievements substantially expanding our conception of the universe and of our place in it and providing



The Griffith Park Observatory was constructed in 1933 as a public facility. In addition to affording spectacular views of the Los Angeles basin, the Pacific Ocean, and San Gabriel Mountains, the observatory has publicly accessible telescopes, and exhibits. Photo: NPS.



The Nike-Hercules base at Oat Mountain in the Santa Susana Mountains was the first base to go operational in the U.S. The opening ceremony, shown above, took place August 30, 1958. Photo: Valley Times Collection/Los Angeles Public Library.

evidence for an expanding universe which supported the hypothesis of a unitary creation event (later dubbed the "Big Bang").

The non-profit Mount Wilson Institute operates the observatory under an agreement with the Carnegie Institution. The Hooker 100-inch reflector telescope remains one of the world's most important optical telescopes, and the Mt. Wilson Observatory continues to host significant scientific research in a variety of fields of astronomy and astrophysics.

The Griffith Observatory in the Hollywood Hills has been determined eligible for listing in the National Register of Historic Places. After experiencing the 60-inch telescope on Mount Wilson (the only one in the world when constructed), Griffith J. Griffith, the benefactor of Griffith Park, decided to construct an observatory accessible to the public. The observatory was constructed by the Works Progress Administration in 1933 and opened to the public in 1935.

It should also be noted that just east of the study area, in the San Gabriel Valley, are two national historic landmarks related to the theme of astronomy and research conducted at the Mt. Wilson Observatory. This includes the Hale Solar Laboratory NHL (1989) and the Edwin Hubble House (1976). The Hale Solar Laboratory is significant for its association with George Ellery Hale, the person most responsible for the rise of the science of astrophysics in the United States and who, as described above, was associated with the Mount Wilson Observatory. Edwin Hubble, also noted above, was one of the leading astronomers of the 20th century and made his most important discoveries at the Mount Wilson Observatory.

Cold War

Recent surveys at NASA's Santa Susana Field Laboratory have identified nine individual sites and three historic districts related to the Cold War era as eligible for listing in the National Register of Historic Places (NASA 2009). The three eligible historic districts would comprise the Alfa, Bravo, and Coca Test Areas. The Delta Test Area was removed and no longer retains historical integrity (NASA 2009). The Alfa, Bravo, Coca, and Delta test stand areas were constructed after the Korean War in the 1950s.

The properties associated with the Sodium Reactor Experiment (SRE) site, one of several atomic energy-related projects that were carried out at the Santa Susana Field Laboratory facility beginning in the early 1950s, currently have no official status of historical significance and may not be eligible, at least under national register criteria, because they presumably lack integrity. However, further investigation will be needed to determine if any features remain (or will remain following completion of cleanup operations) to convey the significance

The Space Flight Operations Facility (SFOF) National Historic Landmark is the hub of the communications network through which NASA controls its unmanned spacecraft flying in deep space.

The Twenty-five Foot Space Simulator National Historic Landmark was built in 1961 and is the only NASA facility capable of producing high-quality space simulation for testing spacecraft under conditions of extreme cold; high vacuum; and intense, highly uniform, solar radiation (Butowsky 1984).

of the site's history. Currently, the Coca test stands are proposed for removal because of contamination (NASA 2014).

The study area contains other recognized resources that relate to Cold War-era science and technology. The Thompson-Ramo-Wooldridge laboratory in Solstice Canyon (SMMNRA) was an important site of early pioneering space research. The site was used to test satellite equipment for space missions, including the Pioneer 12. The structures were burned in a recent fire, but foundations and other site features remain. The study area contains four Cold War-era Nike missile sites. The Mountains Recreation and Conservation Authority interprets a Cold War-era Nike missile site at San Vicente Mountain. The Los Pinetos Nike missile site, a national register property, is located in the Angeles National Forest. Another Nike site is now the site of a county fire training facility in the Santa Monica Mountains. There is also a former Nike missile site on the southern slope of Oat Mountain in the Santa Susana Mountains.

Space Exploration

In 1984, the NPS completed the *Man in Space* theme study to commemorate efforts to explore space including landing a man on the moon, investigating the near Earth environment, and exploring the planets and solar system as part of National Aeronautics and Space Administration's (NASA) American Space Program. Within the study area, the "Man in Space" theme is represented by two properties within Jet Propulsion Laboratory (JPL) complex. The Space Flight Operations Facility (SFOF) National Historic Landmark is the hub of the communications network through which NASA controls its unmanned spacecraft flying in deep space. This facility is where spacecraft tracking and scientific data are received and processed from JPL's Deep Space Network. Also located on the JPL campus, the Twenty-five Foot Space Simulator (Simulator) National Historic Landmark was built in 1961 and is the only NASA facility capable of producing high-quality space simulation for testing spacecraft under conditions of extreme cold; high vacuum; and intense, highly uniform, solar radiation (Butowsky 1984).

Additionally, the Santa Susana Field Laboratory has several sites representing this theme, including the vertical test stands at the Coca Site which were used to develop the Space Shuttle Main Engine.

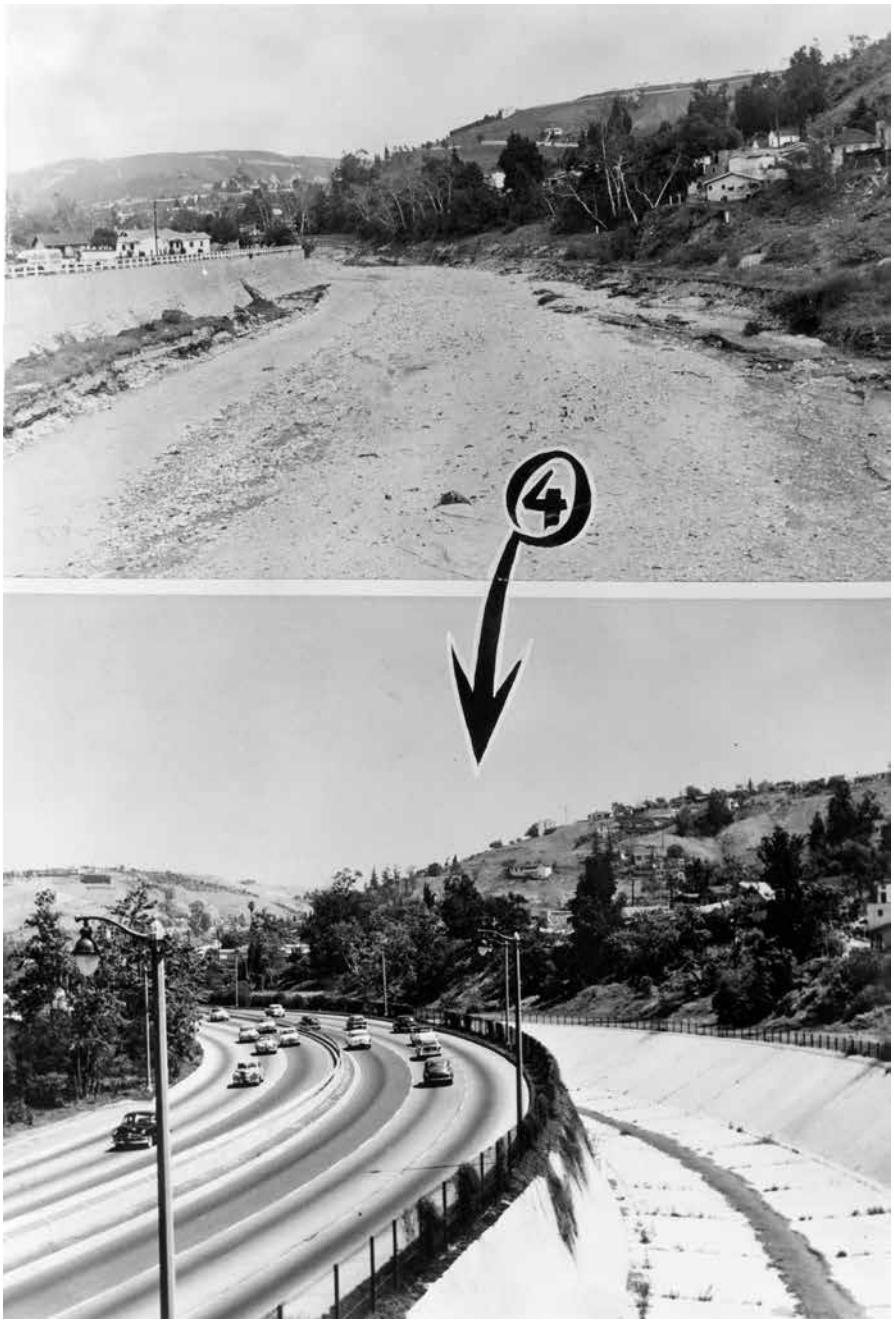
Transportation, Engineering, and Industry

Significant innovations in transportation systems, water conveyance, flood control, and highway development are represented in many study area sites including remnant railways, train stations and stops, bridges, tunnels, and roads. For instance, the Mount Lowe Railway Historic District illustrates the engineering challenges associated with linking the Pacific Electric Railway with recreation destinations high in the rugged San Gabriel Mountains.

Innovations in highway construction and design are depicted in the historic Arroyo Seco Parkway (State Route 110), an 8-mile freeway connecting Pasadena to downtown Los Angeles. The Arroyo Seco Parkway Historic District was listed in the National Register of Historic Places at the state level of significance in 2011. The highway's innovative four-level interchange was determined individually eligible at the national level of significance in 1986 as part of the California Department of Transportation's 1986 Historic Bridge Inventory prior to the eligibility reevaluation and National Register of Historic Places nomination of the Arroyo Seco Parkway.

Remnants of transportation corridors associated with the Butterfield Overland Trail are also present in the study area (Beale's Cut, Los Encinos State Historic Park). Both San Fernando Pass and Santa Susana Pass lie within the study area. The former is now known as Newhall Pass and the modern highway bypasses the original route. However, Beale's Cut, originally excavated in 1854 by Phineas Banning for wagon traffic to Fort Tejon and deepened by Edward Beale in 1863, still remains. The stage stop at Los Encinos also lies near the study area in the San Fernando Valley and is protected within Los Encinos State Historic Park.

The study area also contains a wide range of resources that reflect efforts to store and transport water, including sections of the historic Zanja Madre (the original water systems that supplied El Pueblo de Los Angeles and continued to transport water regionally through the American Period), key components of the



The first freeway in the west, the Arroyo Seco Parkway, was completed in 1940 in conjunction with channelization of the Arroyo Seco. This pair of photos illustrates the transformation of the Arroyo Seco from a natural waterway into the Arroyo Seco Parkway and adjacent flood control channel. Photo: Herald-Examiner Collection/Los Angeles Public Library.

California Aqueduct, and numerous dams and reservoirs created for water storage (e.g. Franklin Canyon Dam, Chatsworth Dam, Encino Reservoir). Portions of the Los Angeles Aqueduct and associated infrastructure that carry and store water from the Owens Valley are also located throughout the study area.

Resources associated with the Los Angeles County Flood Control System, a comprehensive and coordinated flood control system constructed by the U.S. Army Corps of Engineers and the Los Angeles County Flood Control District, are located throughout the study area. As the first and largest program to receive funding under the Flood Control Act of 1936, the Los Angeles County system includes dams, debris basins, spreading grounds, diversion tunnels, outlets, inlets, guide walls, gates, and spillways. A U.S. Bureau of Reclamation theme study on large federal dams determined that the Los Angeles County Flood Control System might be nationally significant for its impact on the history and development of the greater Los Angeles metropolitan area (Billington, Jackson, and Melosi 2005). Further study is needed to identify which resources contribute to the national significance of the systems and to document the integrity of contributing resources. *Table D-12: Re-Engineering Nature – Resources Related to Water Conveyance* and *Table D-13: Re-Engineering Nature – Resources Related to Flood Protection* in *Appendix D* include a selective inventory of sites related to water conveyance and flood protection.

Well No. 4, Pico Canyon Oil Field National Historic Landmark (1966) in the Santa Susana Mountains was the longest-running oil well in the world before being taken out of service in 1990, having pumped crude oil almost continuously for 114 years. Also associated with the context of early oil development at Pico Well No.4 is nearby Mentryville, a California Historic Landmark. Mentryville is the original site of the Star Oil Company, one of several predecessors of Standard Oil of California. Established in 1870, it was named after pioneer oilman Charles Alexander Mentry, who drilled Well No. 4 in 1876. Still well-preserved at the site are Charles Mentry's house and barn and a one-room schoolhouse.

Recreational Resources and Visitor Opportunities

Introduction

With its varied landforms and landscapes, the study area features a variety of scenic and recreational resources. Large, wild, open spaces in the mountains and hills are contrasted with dense urban areas. Within the large expanse of urban areas, hidden, "wild places" that provide recreational opportunities can be found. A short drive can take a person from one of America's most densely populated regions, to stark desert and serene wilderness areas. Subalpine mountain environments are located just miles away from dry deserts and mild coastal beaches.

Recreational resources in the study area range from large wildland parks within Santa Monica Mountains National Recreation Area (SMMNRA), to small neighborhood parks. Recreation activities include a broad range of options including organized sports, swimming, hiking, biking, horseback riding, swimming, camping, picnicking, fishing, wildlife viewing, hang-gliding, use of off-road vehicles, target shooting and hunting. Despite the diversity of recreational opportunities and open spaces, the region has had difficulties preserving enough open space and recreational areas to meet the needs of its ever-growing population.

This section describes an inventory of recreational resources in the study area, an overview of recreational use, an analysis of recreational needs and demand, and an overview of future opportunities for recreation within the study area.

Geographic Scope

The geographic scope of the recreational resources and visitor opportunities description primarily corresponds to the 650,000-acre study area with the exception of the description of the Angeles National Forest and San Gabriel Mountains National Monument. These U.S. Forest Service managed areas contain 180,000 acres of the 650,000-acre study area. However, some information about forest use and visitation applies to the broader national forest.

Inventory of Existing Parks and Open Space

The study area features a variety of areas devoted to recreation in some form, often in conjunction with the preservation of natural open space or historic sites. These include federal and state lands, and an assortment of regional and local parks, nature centers, and preserves. Parks and open space are not evenly distributed throughout the region, and access for those without private transportation is limited.

The study area largely includes the mountains surrounding the more populated valley and



The mountains and hills of the study area are generally large open spaces contrasted with densely populated urban areas in the valleys. In addition to contributing to the scenic quality of the region, these mountains and hills provide for many recreational uses, such as hiking in Griffith Park, shown above. The Verdugo Mountains and San Gabriel Mountains can be seen in the background. Photo: NPS.

basin portions of the Los Angeles region. By extension, most of the larger open space and park areas are located within the mountains while open space and parks in the urban valley and basin areas are relatively sparse, consisting of isolated patches or narrow, disconnected corridors of green space in a matrix of urban and suburban development. Some larger regional open space and park facilities located within or close to dense populations include Hansen Dam Recreation Area and Sepulveda Basin Recreation Area (which is adjacent to the study area). Both are owned by the U.S. Army Corps of Engineers and managed by the City of Los Angeles for recreational use. Griffith Park, a City of Los Angeles park, is another atypically large open space park facility close to large populations.

Open space may be described as any land that is not developed for urban use. This may include natural areas set aside for species protection, lands used for agriculture or natural resource extraction, recreation areas, or areas unsuitable for development either due to a potential hazard (such as slide areas or floodplains) or due to other uses such as groundwater recharge or flood protection (California Resources Agency et al. 2001).

Parks are a type of open space that is designed and managed for uses such as recreation, natural resource conservation, and education. Recreational use may be designated active, passive, or both. Passive use refers to activities that are generally low impact such as hiking, fishing, picnicking, bird watching, or non-motorized boating. Active recreational use may include facilities designed for sports such as soccer or baseball, and lakes for motor-boats and jet skis.

This section examines parks and open spaces that are specifically managed for recreation or conservation purposes. Within the study area, agencies from all levels of government provide open space, park and recreational amenities (*Table 2-3: Parks and Open Space Agencies in the Study Area*, *Table 2-4: Approximate Acreage of Study Areas Parks and Open Space*). *Figure 2-12: Parks and Open Space* provides for an overview of park and open space distribution throughout the study area.

The two largest areas administered for parks and open space are the Angeles National Forest and SMMNRA, the latter of which includes a variety of state and local sites available for public access and enjoyment.

Angeles National Forest and San Gabriel Mountains National Monument

In 1892, this area was established as the San Gabriel Timberland Reserve, eventually be-

Table 2-3 Parks and Open Space Agencies in the Study Area

Level of Government	Agency
Federal	Bureau of Land Management (BLM) National Park Service (NPS) U.S. Army Corps of Engineers (USACOE) U.S. Forest Service (USFS)
State	California State Parks San Gabriel and Lower Los Angeles Rivers & Mountains Conservancy (RMC) Santa Monica Mountains Conservancy University of California
County	Los Angeles County Department of Parks & Recreation Los Angeles County Department of Public Works Los Angeles County Flood Control District County of Ventura
Joint Powers Authorities (JPAs)	Conejo Open Space Conservation Agency Desert and Mountain Conservation Authority Mountains Recreation and Conservation Authority Santa Clarita Watershed Recreation and Conservation Authority
Special Districts	Conejo Recreation and Park District Pleasant Valley Recreation and Park District Rancho Simi Recreation and Park District
Cities	City Parks and Recreation Departments Community Services Departments Public Works Departments

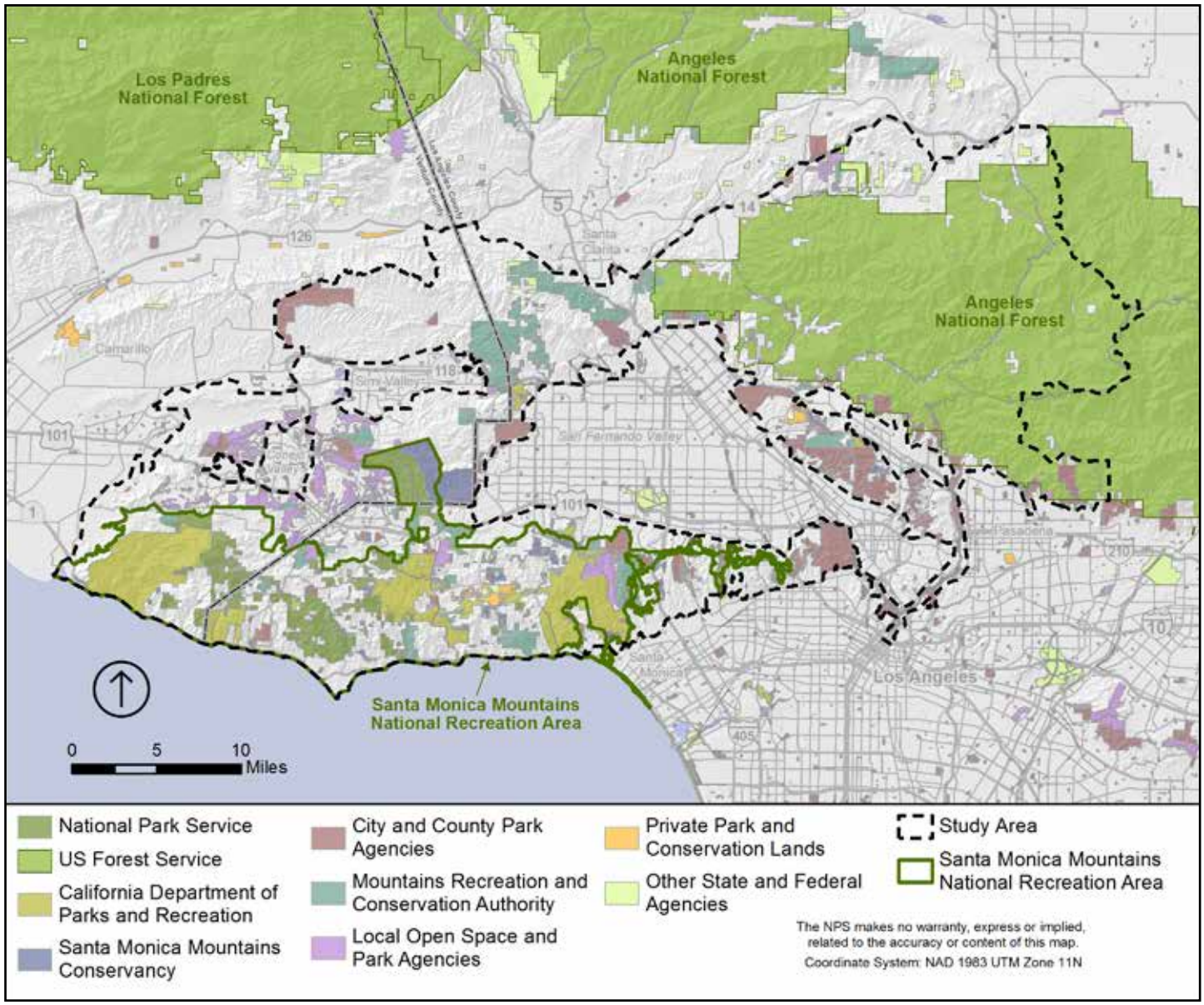


Figure 2-12: Parks and Open Space

Table 2-4: Approximate Acreage of Study Area Parks and Open Space

Parks and Open Space	Approximate acreage within study area	% of study area (707,000 acres)	% of study area open space
Angeles National Forest & San Gabriel Mountains National Monument	180,000	27.7%	52.9%
NPS Lands (SMMNRA, NPS-owned)	23,350	3.6%	6.9%
Bureau of Land Management Lands (BLM)	2,970	<1%	<1%
State Parks	37,280	5.7%	11.0%
County and Regional Parks	74,500	11.5%	21.9%
State Parks	37,280	5.7%	11.0%
Wilderness Parks	2,710	<1%	<1%
Historical Parks and Cultural Sites	1,150	<1%	<1%
Equestrian Parks (public)	75	<1%	<1%
Open space with no public access	6430	1.0%	1.9%
Total Open Space (including USFS and BLM lands)	339,990 acres		

Sources: California Protected Areas Database (CPAD) Version 1.9, March 2013, www.calands.org; SMMC Parks, August 2013, Santa Monica Mountains Conservancy

Notes: Some state parks are historical or cultural sites so these figures overlap (902.7 acres of overlap). Congressionally designated Wilderness areas acreage is included in the total acreage for the Angeles National Forest & San Gabriel Mountains National Monument.





In the Angeles National Forest and San Gabriel Mountains National Monument, waterfalls, like Eaton Falls shown on the left, are an important recreational feature. Trails to panoramic views of the Los Angeles basin and Pacific Ocean are another draw for visitors. Inspiration Point, shown on the right, has been a long time destination for visitors, including tourists accessing the mountains via the Mt. Lowe Railway in the early 1900s. Lefthand photo: Eric Lowenbach. Righthand photo: NPS.

Comprising over 70% of Los Angeles County's open space, the Angeles National Forest and San Gabriel Mountains National Monument primarily serve day-use and family recreation activities.

coming the Angeles National Forest in 1908. On October 10, 2014, President Obama established the San Gabriel Mountains National Monument which became the eighth U.S. Forest Service national monument. Located primarily in the Angeles National Forest, the monument is 346,177 acres as shown in *Chapter 1*, on page 4 (USFS 2014). Because the national monument is newly established, the following description is based on information about the Angeles National Forest, including those areas newly designated as the San Gabriel Mountains National Monument.

Visitation and Use

Located in the heart of the greater Los Angeles metropolitan region, more than 15 million people live within a 90-minute drive of the Angeles National Forest and San Gabriel Mountains National Monument. Proximity to such a large urban population means that these U.S. Forest Service managed areas are among the most visited in the United States. In 1992, the U.S. Forest Service reported that the Angeles National Forest was the second highest ranked national forest in the United States for intensity of use. The U.S. Forest Service estimates that over 3.5 million visitors come to the national forest on an annual basis making recreation the predominant use of the forest.

Comprising over 70% of Los Angeles County's open space, the Angeles National Forest and San Gabriel Mountains National Monument primarily serve day-use and family recreation activities. Almost all of the visitors are local in origin. Because over 90% of the San Gabriel Mountains are steep and rugged, these visits tend to be concentrated in the developed recreation areas that are easily accessible by roads. Within the study area, major destination areas include Big and Little Tujunga Canyons, and the network of trails that are accessible from the foothill communities of the northeast San Fernando Valley, Crescenta Valley, and northwest San Gabriel Valley. Parks providing access to these trail networks include Wilson Canyon Park north of Sylmar, Deukmejian Wilderness Park in Glendale, Hahamongna Watershed Park and Eaton Canyon Park in Pasadena, and Sierra Madre Historical Wilderness Area in Sierra Madre. In addition, many local trail access points dot the edges of the Angeles National Forest and San Gabriel Mountains National Monument.

Waterfalls are an important recreational feature of the San Gabriel Mountains. Geologic uplift associated with the Sierra Madre fault system created numerous falls that dot the southern base of the mountains. Some of the most popular and easily accessed falls include the Pasadena Glen Falls, Millard Canyon Falls, Bailey Canyon Falls, Eaton Falls, and Switzer's Falls (Chester 2004).

In the western San Gabriel Mountains, most recreational facilities such as trailheads, picnic, areas, interpretive sites and campgrounds are located along the Angeles Crest Scenic Highway, the Angeles Forest Highway, Chantry Flat road, Sand Canyon/Little Tujunga

Recently, the U.S. Forest Service through its Southern California Consortium, has been providing environmental education and outreach to underserved urban communities on the importance of natural resources within southern California's national forests.

road, and Soledad Canyon road. The recently established Magic Mountain Wilderness area comprises 12,282 acres of the San Gabriel Mountains National Monument. However, no designated trails currently access this area. A segment of the Pacific Crest National Scenic Trail (Pacific Crest Trail or PCT) traverses the mountain divide and exits the forest near BLM lands in the Upper Santa Clara River area. The Gabrieleno National Recreation Trail also traverses this area of the national forest.

Visitor Services

Visitor services provided in the Angeles National Forest and San Gabriel Mountains National Monument includes interpretive services, visitor center management, interpretive media, in-forest concessions, management, fee collection, community outreach, visitor safety and law enforcement services. The overall mission of the interpretive services, visitor centers and education program is to forge intellectual and emotional connections between people and their natural and cultural heritage.

The U.S. Forest Service provides education and interpretation through visitor centers, interpretive sites and outreach programs. Located along the Angeles Crest Highway, the Chilao Visitor Center and Clear Creek Information Center each provide services and literature for visitors including environmental education activities, general forest information and forest related materials. There are also several interpretive sites at locations such as Red Box, Inspiration Point, and along the Upper Santa Clara River (Soledad). The Inspiration Point site offers an opportunity to learn about the history of the Mount Lowe Railway in the San Gabriel Mountains. The U.S. Forest Service also provides a number of interpretive and education programs. Recently, the U.S. Forest Service through its Southern California Consortium, has been providing environmental education and outreach to underserved urban communities on the importance of natural resources within southern California's national forests. Through this program, the U.S. Forest Service has established relationships in Hispanic and African-American communities in urban areas, with proposals to establish Native-American and Asian programs in the near future. The program also focuses on the recruitment and employment.

Also located in the Angeles National Forest, along the Angeles Crest Highway, is the Haramokngna American Indian Cultural Center. Operated by Pukúu Cultural Community Services, a native non-profit organization, the purpose of the cultural center is to share Native American history, heritage, and culture of the five regional tribes of the Angeles National Forest and San Gabriel Mountains National Monument. Those tribes include the Tongva, the Chumash, the Tataviam, the Kitanemuk, and the Serrano. The site features a visitor center, museum, and art gallery. Programs include festivals, and exhibitions.

Other community outreach includes activities that encourage the stewardship of national forest lands through the participation of people from local areas. These efforts foster sustainable recreation. Partnerships and volunteers are emphasized to improve visitor services and increase opportunities for interpretation and environmental education.

Throughout the Angeles National Forest and San Gabriel Mountains National Monument, the U.S. Forest Service manages hundreds of recreation special-use authorizations, including concession campground complexes, concession target shooting areas, ski areas, a marina, and organization camps. The U.S. Forest Service also issues and administers numerous recreational events, such as mountain bike events and car rallies (USFS 2005).

Facilities

The U.S. Forest Service operates over 350 buildings throughout the national forest and national monument areas. These range from restroom facilities, fire stations and administrative offices. In addition to the visitor centers and interpretive sites previously mentioned, the U.S. Forest Service operates 63 campgrounds with over 1,100 individual campsites and an additional 36 picnic areas. Numerous trails are located in the forest, these trails are described in the following section, Trails and Scenic Highways.

Multiple agencies maintain a large road network in the national forest and national monument, including bridges, culverts, low-water crossings and tunnels. The California Department of Transportation is responsible for one major highway in the study area portion of

Santa Monica Mountains National Recreation Area is a cooperative effort that joins federal, state, and local park agencies with private landowners to protect the natural and cultural resources of this transverse mountain range and seashore while providing public access and recreational opportunities.

the national forest, California State Route 2. Los Angeles County also maintains a portion of the road network. The U.S. Forest Service maintains 1,000 miles of roads.

The 2005 land management plan for the Angeles National Forest indicates that roads and trails will be maintained to minimize the level of effects to species and watersheds while safely accommodating use. National Forest staff plan to maintain approximately 10% of National Forest System roads to their objective maintenance level. Decommissioning of unneeded or unauthorized roads and trails will be emphasized. Angeles National Forest staff plan to complete site-specific road analysis on approximately 30% of the unclassified roads and make appropriate designations.

Wilderness Areas

There is one Congressionally designated wilderness area in the study area, which is located in the new San Gabriel Mountains National Monument. The Magic Mountain Wilderness area is 12,282 acres and was designated by Congress as a wilderness area in 2009. The area features steep narrow canyons with a combination of chaparral, pines and hardwood forests. This area provides habitat for many of the forest's threatened and endangered species. There are currently no officially designated trails that fall within this wilderness area.

Santa Monica Mountains National Recreation Area

Visitation and Use

Santa Monica Mountains National Recreation Area (SMMNRA) is located in the southwestern portion of the study area. Administratively, the national recreation area is a cooperative effort that joins federal, state, and local park agencies with private landowners to protect the natural and cultural resources of this transverse mountain range and seashore while providing public access and recreational opportunities. Four parkland management agencies own and cooperatively manage most of the public parkland within SMMNRA. California State Parks (CSP) owns approximately 35,850 acres covering five individual state parks and several beaches. NPS owns 23,500 acres covering 13 park sites and individual open space lands for habitat and trail connectivity. Santa Monica Mountains Conservancy (SMMC) and its land management agency, Mountains Recreation and Conservation Authority (MRCA), own 15,160 acres covering 18 park sites. More than one-half the land base is within the California Coastal Zone, replete with scenic ridgelines and stunning views toward the Pacific Ocean and including 13 county and state public beaches along the coastline.

The mountains, beaches, historic sites, and wild landscapes of SMMNRA attract an estimated 33 million visits per year. The vast majority of visitors come from greater Los Angeles. An estimated two million visitors use the recreation trail network and participate in park educational programs. Visitation to NPS-managed sites in the recreation area totals approximately 500-700,000 people annually (NPS 2012c). Among the more popular recreation destinations within SMMNRA are beaches and trails. Besides beach and trail related activities, other recreation in SMMNRA includes camping, climbing, fishing, visiting historic sites, wildflower viewing, and wildlife viewing.

For many visitors, SMMNRA serves as a regular weekend beach trip or a site for daily visits to their local community or neighborhood park. Other visitors come to the recreation area from farther away on day trips as organized interest groups – seniors, youth groups, birding groups, educational groups, bicycle clubs, hiking and trail running groups, bus tours, special needs users, or family groups. Another group of visitors might be described as cultural heritage tourists, those who travel to see cultural and historic sites and engage in culturally related activities ranging from museums and historic house tours to craft fairs.

Sizable groups of regional visitors are drawn to SMMNRA for special events such as the annual Science Festival, themed special events (such as a sneak preview screening and reception for the Ken Burns film "The National Parks: America's Best Idea") and the BioBlitz (a 24-hour species inventory co-sponsored by National Geographic) which brought large crowds. Various commercial users constitute another visitor category at SMMNRA. These users may include people in the film industry on a shoot, corporations or non-profits using the park for a retreat or group picnic, or recre-

Santa Monica Mountains National Recreation Area Interpretive Themes

The following interpretive themes have been identified for Santa Monica Mountains National Recreation Area. Interpretive themes are often described as the key stories or concepts that visitors should understand after visiting a park—they define the most important ideas or concepts communicated to visitors about a park unit. The themes were developed as part of the 2012 long-range interpretive plan and have been adopted as part of the national recreation area's foundation document, as described in *Chapter 1: Introduction*.

- Mediterranean Ecosystem – In a growing urban environment, Santa Monica Mountains National Recreation Area preserves a substantial portion of the rare Mediterranean biome (ecosystem), a rapidly diminishing resource that exists in only five places in the world.
- Escape / Open Space – In a vast, expanding urban area, the open space of the Santa Monica Mountains provides an oasis for inspiration, renewal, and recreation.
- Gateway to the National Park System – Santa Monica Mountains National Recreation Area is a gateway for discovering America's natural wonders and cultural heritages and the need to preserve them.
- Human Use/Cultures – For more than 10,000 years, people have shaped this land, just as the land has shaped the people. These processes continue today.

ational services providers offering horseback riding, kayaking, or other kinds of tourism.

Visitor Services

A wide range of agencies provides visitor services and recreation in SMMNRA. Among these services are outreach, education, visitor safety and law enforcement, interpretation, volunteer programs, and visitor center management. A quarterly publication titled, "Outdoors," provides a schedule of programs and events offered by various public agencies throughout SMMNRA.

Interpretive Services and Public Programming

The NPS manages one visitor center (Anthony C. Beilenson Interagency Visitor Center located at King Gillette Ranch), one Native American Indian culture center (Satwiwa), one small weekend visitor contact station (Circle X), a portable visitor contact trailer, an information table at Paramount Ranch on the weekends, and a roving van staffed by NPS staff and volunteers. During heavy visitor use, NPS park rangers rove high visitation areas for several hours and provide informal interpretation to visitors they encounter (NPS 2012c). The NPS also recently opened an outreach office at El Pueblo de Los Angeles Historical Monument in partnership with CSP.

Partners to NPS provide a range of interpretive and public programming within SMMNRA. CSP offers an array of interpretive services: interpretive tours, educational programs, summer community group programs, an annual whale festival, and seasonal campground programs. CSP also has visitor contact stations at Leo Carrillo, Sycamore Canyon, Malibu Creek State Park, Topanga State Park (Trippet Ranch – currently closed for renovation), Will Rogers State Historic Park, and Malibu Lagoon, where CSP facilitates docent-led tours at the Adamson House.

MRCA operates visitor contact stations at Franklin Canyon Park and Temescal Gateway Park. In addition, the Charmlee Wilderness Park has a small visitor contact station. MRCA also offers a wide range of programs within SMMNRA including curriculum-based environmental education programs; after-school programs for at-risk youth; public programs for seniors, families and small children; transportation programs that offer groups and organizations the opportunity to visit public open space; and training programs for individuals and other park professionals.

Visitors can also take advantage of the several Junior Ranger programs throughout SMMNRA offered by NPS and MRCA.

Outreach

In 2010, the NPS interpretive division formally established an outreach branch to lead future efforts to connect the park, its resources, and its mission with urban audiences in the Los Angeles area. This branch also serves as a resource for existing outreach efforts undertaken by staff from various divisions throughout the park.

A very successful youth employment program called SAMO Youth, begun in 2000, introduces students to the National Park Service mission and the benefits of environmental careers while accomplishing much-needed work at the park. This training and employment program is designed to reach students early





Education programs in Santa Monica Mountains National Recreation Area provide opportunities for urban school aged children to visit the national park system and sometimes engage in hands-on conservation work. Photos: NPS.

in their career decision-making. In particular, this program serves youth who may not otherwise have discovered the National Park Service as a career choice because of limited exposure to the park or the agency.

Education

The NPS education team at SMMNRA has developed a continuum of popular, high-quality curricula with close attention to California state education standards and, where applicable, the National Science Education Standards. Education programs range from kindergarten through high school and are aligned to state curriculum objectives for designated subject areas. Many of these programs are conducted at NPS sites and some involved hands-on habitat restoration work.

The NPS education team at SMMNRA is also working with the Santa Monica Mountains Education Consortium on its five-year education plan to encourage collaboration and communication on the use of the resources of the recreation area for K-12 science education. In addition, the park has recently implemented the Teacher-Ranger-Teacher (TRT) Program, a nationwide program that introduces teachers and their students to the NPS.

The park's educational offerings also draw on the resources of the Southern California Research Learning Center (SCRLC), one of a network of 17 NPS Research Learning Centers across the nation. SCRLC programs focus primarily on college-level students and university-affiliated researchers, as well as Public Participatory Science including the Climate Change Ambassador and the National Native Bee/Climate Change programs.

SMMNRA is a pilot park for the California Phenology Project, which is an effort among several national parks in California to engage visitors in citizen science monitoring efforts that contribute to climate change research.

Other SMMNRA partners also offer high-quality, curriculum-based educational programming. A 2010-2011 sampling of programs includes the following (NPS 2012c):

- CSP offers educational programming for grades 3-12 on marine ecology at Leo Carrillo State Park; native plants and wildlife at Point Mugu State Park; habitat preservation and wetlands functions at Malibu Lagoon; and habitat preservation and wilderness safety at Malibu Creek.
- MRCA offers three- to five-day residential educational camps focusing on natural sciences, social sciences, outdoor skills, and team- and leadership-building at King Gillette Ranch and Temescal Gateway Park. MRCA also works with the NPS education team to provide interpretive nature hikes for K-6th grades at Franklin Canyon Park.
- The Mountains Restoration Trust offers a Youth Naturalist Program, a Discovery Nature Camp, and the SHRUB program for children and youth, as well as programs in conservation, restoration,





Several visitor facilities operated with partners and volunteers are found in SMMNRA, including several owned by NPS. Satwiwa Native American Indian Cultural Center at Rancho Sierra Vista (left), and the new Anthony C. Beilenson Interagency Visitor Center at King Gillette Ranch. Photos: NPS.

Like most National Park Service sites, SMMNRA could not function at current levels without its volunteers. The park registered over 8,000 individual volunteers who contributed more than 86,167 volunteer hours in FY2011 (NPS 2012c).

natural and cultural history, and native plants for grades 2-12.

- The Resource Conservation District (RCD) of the Santa Monica Mountains offers programs for grades K-6 on Chumash cultural and natural history at Topanga State Park, and science programming for grades 4-6 on freshwater lake habitats at Sepulveda Basin Wildlife Reserve and Malibu Lagoon.
- The Children's Nature Institute offers a regular schedule of Outreach Field Discovery trips to SMMNRA.
- NatureBridge, the newest educational partner in SMMNRA, began offering overnight programming for youth organizations and students in grades 4-12 at Circle X Ranch in 2010.

Volunteers

Like most National Park Service sites, SMMNRA could not function at current levels without its volunteers. The park registered over 8,000 individual volunteers who contributed more than 86,167 volunteer hours in FY2011 (NPS 2012c).

Volunteer programs range from the Mountain Bike Unit and the Mounted Volunteer Patrol, to partnerships with national and local organizations such as the Sierra Club, Boy Scouts and Girl Scouts U.S.A., Santa Monica Mountains Trails Council, and local colleges to provide volunteers for special events such as National Trails Day, National Public Lands Day, Keep America Beautiful, the Great American Clean Up, and Earth Day. Other growing volunteer resources derive from providing community service opportunities for high school and college students. SMMNRA has also developed volunteer projects for college students from programs such as AmeriCorps, Student Conservation Association, and Alternative Spring Breaks (NPS 2012c). In addition, a group of approximately 25 people provide consistent support for interpretive, education, and outreach activities throughout SMMNRA; and a core of some additional 60 volunteers assist NPS and MRCA with interpretive programming in Franklin Canyon. These volunteers help with educational programming, lead hikes, present special programs within their areas of interest, and volunteer their skills in technology and other expertise to assist in programming (NPS 2012c).

Facilities

As with visitor services, there is a broad range of agencies that provide recreation in SMMNRA, and as such, facilities are owned and managed by several entities.

SMMNRA encompasses more than 35 different sites and facilities where recreation, interpretative and education activities are currently provided, including those sites described above under Visitor Services.

Several NPS-owned sites have basic facilities such as parking areas, kiosks, signs, trails, and in some cases picnic areas, restrooms and water. This characterizes Arroyo Sequit, Cheeseboro/Palo Comado Canyons, Rocky Oaks,



Hansen Dam, located along Tujunga Wash near the base of the San Gabriel Foothills, includes diverse facilities, including two equestrian centers. The area is a popular location for equestrian uses. Photo: NPS.



A variety of California State Parks operates in the study area, including some newer, more urban-oriented parks such as Los Angeles State Historic Park. Photo: California State Parks.

Two significant flood risk management facilities, Sepulveda Dam Basin and Hansen Dam Basin include recreation uses through long term leases with the City of Los Angeles.

Solstice Canyon, and Zuma/Trancas Canyons. Other NPS owned sites in SMMNRA include visitor, educational and interpretive facilities including those described under Interpretive Services and Public Programming at King Gillette Ranch, the Satwiwa Native American Indian Cultural Center at Rancho Sierra Vista, Franklin Canyon Park, and Circle X Ranch. Still other NPS owned facilities include Paramount Ranch, featuring the "Western Town" movie set, and Peter Strauss Ranch, which was a ranch and resort and still retains features from those uses. Several of the NPS lands are cultural landscapes that are listed, eligible, or potentially eligible for listing on the National Register of Historic Places (NRHP).

There are 16 campgrounds within SMMNRA, six of which are designated for group use. The group campgrounds range in maximum capacity from 20 to 150 people. The non-group campgrounds provide 342 tent and RV sites throughout SMMNRA. The largest campgrounds are operated by CSP and include Sycamore Canyon, Leo Carrillo, Thornhill Broome and Malibu Creek. Two walk-in campgrounds, La Jolla in Pt. Mugu State Park and Musch Camp in Topanga State Park are also managed by CSP. CSP also manages several large picnic areas including Sycamore Cove and Piuma (part of Malibu Creek State Park). There are two commercial use permitees for SMMNRA that rent horses and give tours on NPS land. The national recreation area also contains an extensive network of trails and related facilities as described in the next section.

Bureau of Land Management Lands

The Bureau of Land Management (BLM) manages nearly 3,000 acres of land in the study area. These lands consist of isolated parcels scattered throughout Soledad basin, which are managed by BLM's South Coast District Resource Management Plan. This plan has designated most of the parcels in the study area for sale or exchange under Federal Land Policy and Management Act of 1976 (FLPMA). The FLMPA declared it the policy of the United States that, "....the public lands be retained in federal ownership, unless as a result of the land use planning procedure provided in this Act, it is determined that disposal of a particular parcel will serve the national interest..." As a result, several parcels are designated for exchange with the U.S. Forest Service (BLM 1994).

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers operates several dam facilities in the Los Angeles basin the primary purposes of which relate to flood risk management and water resources. Other activities that do not impede or diminish the purpose of flood risk management are permitted in these areas by the U.S. Army Corps of Engineers, most notably recreation. Since the 1940s, the U.S. Army Corps of Engineers has been authorized to construct, maintain, and operate public park and recreation amenities as part of these dam and basin projects, and to permit the construction, maintenance, and operation of such amenities (USACOE 2011b). Two significant flood risk management facili-



Ed Davis Park in Towsley Canyon, located in the eastern Santa Susana Mountains and managed by the Mountains Recreation and Conservation Authority, includes trails for walking, hiking, and mountain biking through a variety of habitat types. Photo: NPS.



Los Angeles County Department of Parks and Recreation operates a variety of visitor centers in and near the study area including Placerita Canyon Nature Center (shown), and Eaton Canyon Nature Center. Photo: NPS.

Both Los Angeles State Historic Park and Rio de Los Angeles State Park are located along the Los Angeles River and were in large part the result of grassroots advocacy to bring this additional park and open space land to underserved communities.

ties, Sepulveda Dam Basin in the southern San Fernando Valley along the Los Angeles River, and Hansen Dam Basin at the confluence of Big and Little Tujugna Washes in the northeastern San Fernando Valley, include recreation uses through long term leases with the City of Los Angeles.

The recreation lease area at Sepulveda Dam Basin includes approximately 1,500 acres with facilities including two public golf courses, a universally accessible playground, several sports facilities, a garden center, a Japanese garden, model airplane facility, a dog park, an intergenerational center, a miniature golf course, a velodrome, individual park areas with picnicking, playgrounds, and sports fields, and natural areas (USACOE 2011b). The recreation lease area for Hansen Dam Basin is approximately 1,300 acres. Current uses in the basin includes an aquatic center with a lake for fishing, boating and a separate lake for swimming; a golf course; a sports complex; a recreation center; a park facility with picnic, sports and trail facilities; and two equestrian centers. Recreational trails are found throughout the Hansen Dam Basin (USACOE 2011).

State Parks

California Department of Parks and Recreation (CSP) owns and manages a diverse range of facilities from state beaches, to wildland parks, to urban and historic parks. More recently in the agency's history, CSP has added two urban parks to the study area, including Rio de Los Angeles State Park and Los Angeles State Historic Park, providing close to home access to more urban communities. Both of these parks are located along the Los Angeles River and were in large part the result of grassroots advocacy to bring additional park and open space land to underserved communities.

In all, CSP operated 14 sites in the study area. In addition to the two newer urban parks mentioned above, Los Encinos State Historic Park is also located in urban Los Angeles. Five CSP sites, Point Mugu, Leo Carrillo, Malibu Creek, and Topanga state parks, and Will Rogers State Historic Park, are entirely within the boundary of SMMNRA. Other state park facilities are public beaches including Robert H. Meyer Memorial State Beach, Point Dume State Beach, Malibu Lagoon State Beach, and Will Rogers State Beach among others. Other CSP sites in the study area include Santa Susana Pass State Historic Park and Placerita Canyon State Park.

County and Regional Parks

The Los Angeles County Department of Parks and Recreation manages numerous parks throughout the study area. Some county parks function as local and community parks for unincorporated areas of Los Angeles County while others function as large regional parks that offer many types of recreational opportunities to a large service area. In addition, Los Angeles County manages a series of sites classified as natural areas, most of which include nature centers. Additional facilities managed

by Los Angeles County as recreational facilities include the Hollywood Bowl and John Anson Ford Amphitheatre, both of which are large outdoor performing arts facilities located within park-like settings. The County of Ventura manages four regional parks within the study area, including Happy Camp Regional Park in Moorpark, Oak Park and Tapo Canyon Park, both in Simi Valley, and Santa Rosa Valley Park in Thousand Oaks.

A number of open space and park sites that function for regional use are owned and/or managed by state-established conservancies, such as the Santa Monica Mountains Conservancy, special districts, and joint powers authorities. A joint powers authority (JPA) is an entity whereby two or more public authorities such as local governments or special districts operate collectively under a separate board to address common goals. JPAs are commonly used in the region for open space, parks, and recreation purposes.

Local and Community Parks

Local and community parks are generally less than 50 acres and are designed to serve the active recreational needs of neighborhoods and communities. The types of parks that would fall in this category include athletic fields and courts, playgrounds, and pocket parks. Activities include play, organized sports, picnicking, barbequing, and hiking or walking on trails. Nearly 200 local and community parks are located in communities throughout the study area. Together these parks provide over 12,000 acres of land managed specifically for recreational use. These parks are typically managed by city park agencies and community services departments.

Griffith Park in the City of Los Angeles is one of the largest municipal parks in North America, spanning 4,217 acres. A gift to the people of Los Angeles by Colonel Griffith J. Griffith in 1896, the park is also the largest City-designated historic landmark in Los Angeles. The park is located at the eastern terminus of the Santa Monica Mountains and includes portions of the adjacent Los Angeles River. The park provides a broad range of developed facilities such as the Los Angeles Zoo and Botanical Gardens, the Griffith Observatory, the Greek Theatre, the Autry National Center (a museum), Travel Town Transportation Museum, a visitor center, and four golf courses. By contrast, the park also includes large areas of natural habitat including chaparral, woodland and riparian vegetation. Fifty-six miles of hiking and equestrian trails throughout the park offer passive recreation and exceptional scenic views of the region. Located north of downtown Los Angeles, Griffith Park is adjacent to dense populations in the Los Angeles basin and the San Fernando Valley, serving as an urban oasis.

An analysis conducted by the Trust for Public Land demonstrated that higher density communities with lower than average median income in Los Angeles County typically do not have adequate access to local and community parks (TPL 2004). Although many cities in the study area have ample access to local and community parks, others have few or no parks available. The section *Recreation Needs and Opportunities* discusses this issue further.

Local Wilderness Parks

In recent years land conservancies and municipal governments have cooperated to preserve wilderness parks. Wilderness parks are large undeveloped open spaces that provide passive recreational opportunities and protect habitat for wildlife. Recreational activities include hiking, biking, horse riding and dog-walking. Wilderness parks are typically located in foothill communities such as Glendale, Pasadena and Sierra Madre and provide recreational connections to the Angeles National Forest. Over 2,700 acres of land in the study area has been designated as this type of parkland.

Pasadena manages a unique kind of natural park called a watershed park. Hahamongna Watershed Park is located above Devil's Gate Dam adjacent to the Angeles National Forest. Established in 1997, these lands were previously used for sand and gravel mining operations. When these operations ceased, habitat was restored and a park that integrates water resource conservation facilities was established based on community input and participation. The park is meant to be a showcase for water and natural resources education and utilization, preservation of native plants and habitat, Native American culture and both passive and active recreation.

Historical Parks and Cultural Sites

Often cultural and historic sites occur within a park-like setting and are managed by government agencies or non-profit organizations. These facilities tend to have an educational mission, providing opportunities for outreach and education. Examples of historic parks in the study area include Los Angeles State Historic Park, Los Encinos State Historic Park, Santa Susana Pass State Historic Park and Will Rogers State Historic Park, all managed by the State of California. Local historical parks, museums and markers that commemorate historical events and features are found throughout the study area. El Pueblo de Los Angeles Historical Monument in downtown Los Angeles is an example of a locally managed cultural site.

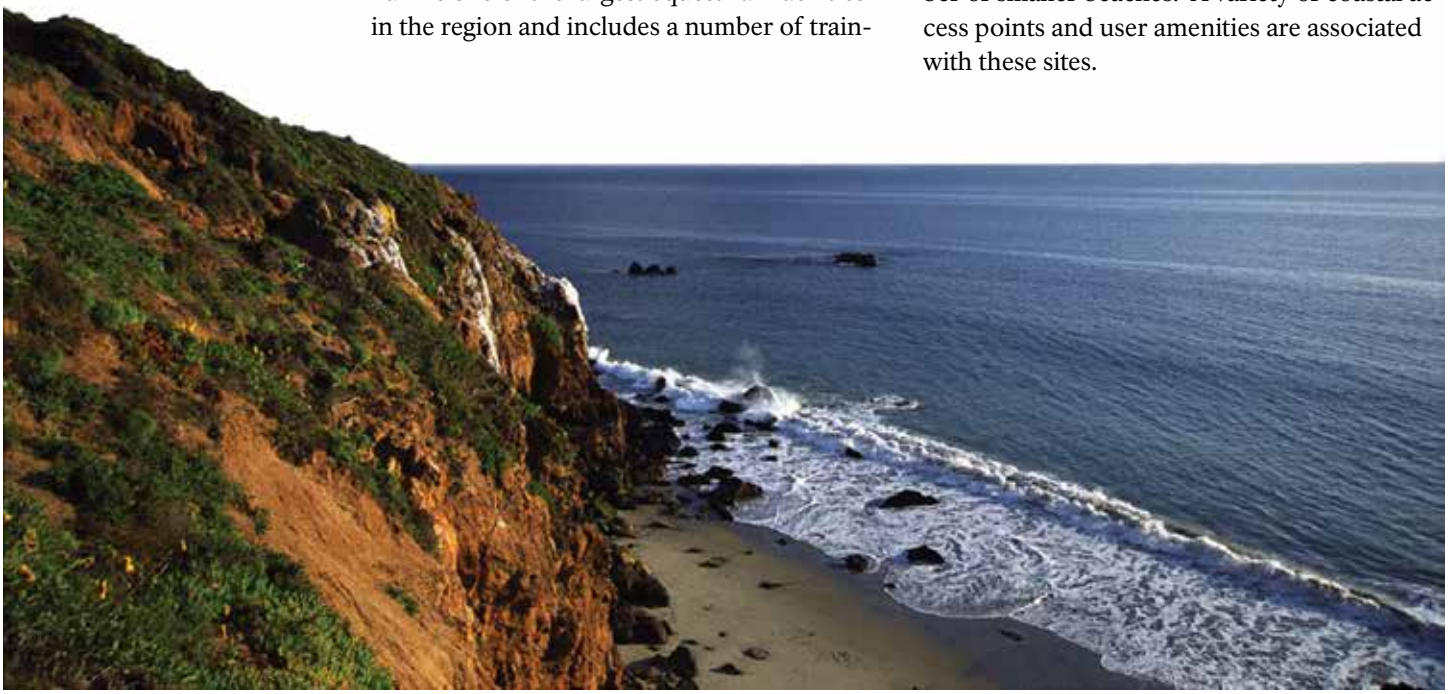
Equestrian Parks, Centers, and Districts

Use of trails and river corridors by equestrians has a long history in the study area. Although some of these facilities have been displaced by urban development, many facilities remain and include robust equestrian communities across the study area. Most equestrian oriented facilities are located along the urban-open space interface areas where land use patterns and associated policies facilitate horsekeeping and equestrian recreation facilities. Many facilities are operated by private entities, but some publicly owned and managed facilities also are located within the study area. The Los Angeles Equestrian Center within Griffith Park is one of the largest equestrian facilities in the region and includes a number of training and show arenas, boarding facilities and connections to trails.

Several local jurisdictions such as the cities of Los Angeles, Burbank, Simi Valley, Malibu, and Santa Clarita have designated residential equestrian districts in the study area. Several unincorporated communities also have land use designations for residential horsekeeping such as Altadena, Acton, and Agua Dolce. Equestrian districts are established to recognize particular areas where the keeping or maintaining of horses and other large domestic animals for the personal use of members of the family residing on the premises is permitted.

Beaches

The study area includes large contiguous stretches of beaches, including iconic sites known for their scenic quality and historic and current association with ocean-based activities such as surfing. Along the coastal portion of the study area, California State Parks operates five major beaches including those at Point Mugu State Park, Leo Carrillo State Park, Malibu Lagoon State Beach, Point Dume State Beach, and Robert H. Meyer Memorial State Beach (LADBH 2013). Los Angeles County manages another 8 beaches, including Nicholas Canyon, Zuma Beach, Point Dume, Dan Blocker Beach, Malibu Surfrider Beach, Las Tunas Beach, Topanga Beach, and Will Rogers Beach (LADBH 2013) as well as a number of smaller beaches. A variety of coastal access points and user amenities are associated with these sites.



Many continuous stretches of beaches are located in the study area, including Point Dume State Beach. Photo: NPS.

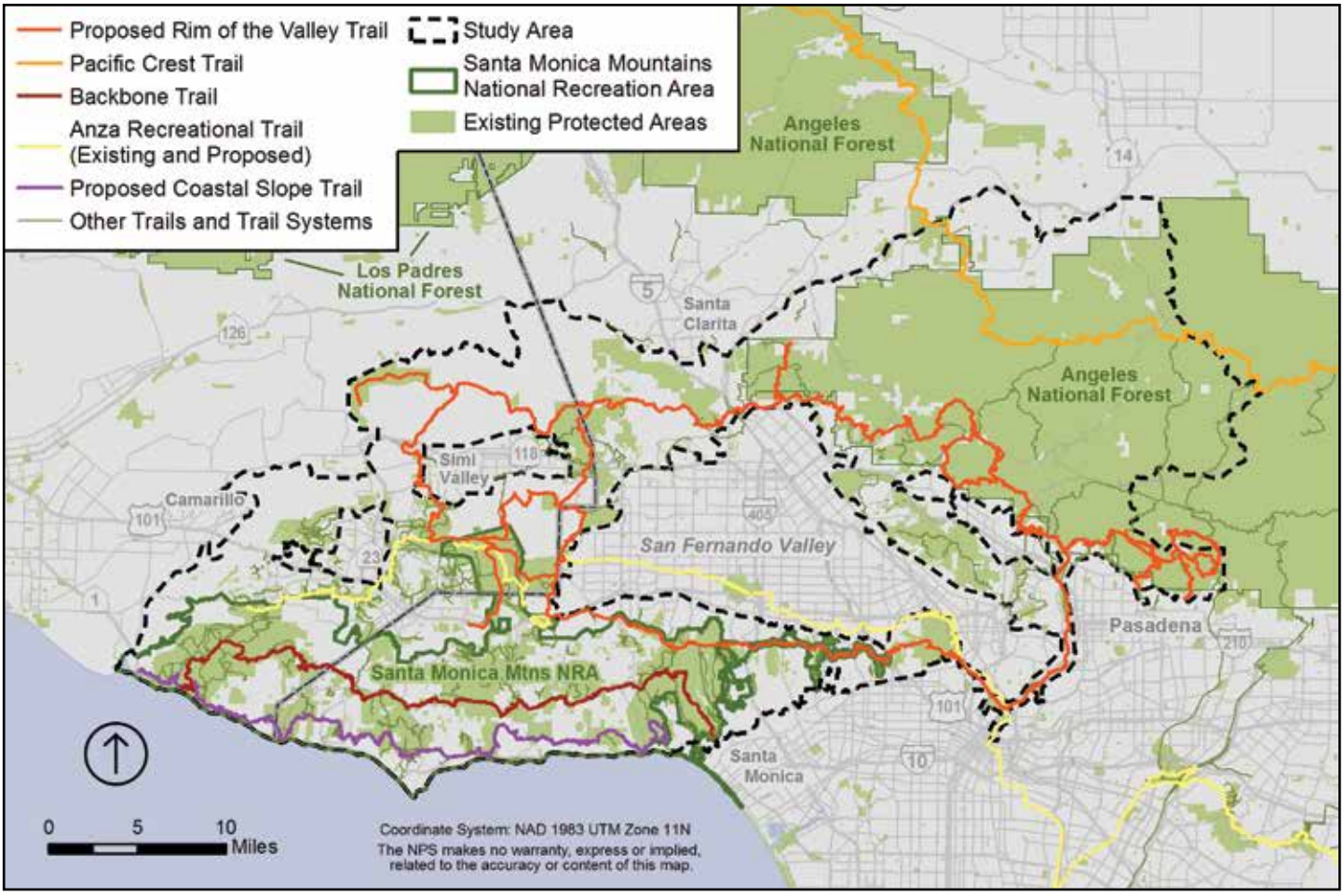


Figure 2-13: Regional Trails

The increasing demand for trails is exemplified in the 2007 Public Opinions and Attitudes on Outdoor Recreation conducted for California State Parks which revealed through surveys that the top outdoor activity in the state is recreational walking, with bicycling on paved surfaces ranked as third, and day hiking on trails as fourth (CSP 2009).

Trails and Scenic Highways

Trails and scenic highways provide opportunities for hiking, horseback riding, running, biking, and leisure driving. They also provide a means of connecting people to places including parks and open spaces where they can partake in other recreational activities. The study area contains a wide range of trail types including paved trails separate from roadways, unpaved trails, and nationally recognized scenic, historic, and recreation trails.

Trails

Trail corridors allow people to connect from their communities to open space and park resources, while experiencing their surroundings and contributing to their mental and physical well-being. Trail use also provides opportunities for social interaction. With the integration of educational and interpretive elements, trails also become spaces for connecting people to special places and their stories. The increasing demand for trails is exemplified in the 2007 *Public Opinions and Attitudes on Outdoor Recreation* conducted for California State Parks which revealed through surveys that the top outdoor activity in the state is recreational walking, with bicycling on paved surfaces ranked as third, and day hiking on trails as fourth (camping at developed sites was ranked second)(CSP 2009). When asked if they would increase their participation in any particular activities if good opportunities became available, respondents indicated that recreational walking and trail hiking were in the top three activities in which they would engage. The value of trails to communities is also reflected in local jurisdictions' polling of residents. As part of the City of Los Angeles' 2009 Recreational Needs Assessment process, residents were surveyed about unmet recreation needs. Respondents were presented a list of 30 various parks and recreation facilities and were asked to indicate which ones they and members of their household experienced a need for. The parks and recreation facilities with the highest percentage of need from respondent households were walking and biking trails (63%), small neighborhood parks (60%), large community and regional parks (53%),

shelters and picnic areas (50%) and nature trails (46%)(City of Los Angeles 2009).

Many trails exist in the upland mountains and foothills of the region. However, trail corridors also follow waterways which provide the ability to traverse and connect subwatershed areas as well as other open space areas. Trail corridors, depending on their widths, provide opportunities for integrating native vegetation and limited habitat and groundwater recharge and water quality improvement features such as bioswales.

Trails are maintained by a broad range of agencies. In the Santa Monica Mountains, nearly 500 miles of trails and roads are managed by the NPS, California State Parks, and a variety of regional and local agencies. The Angeles National Forest offers hundreds of miles of hiking and equestrian trails which include portions of National Recreation Trails, and the Pacific Crest National Scenic Trail. Trails in the Angeles National Forest are open to hiking, equestrian and mountain bike use, except for the Pacific Crest National Scenic Trail and trails in designated wilderness areas.

In the urban areas, trails are primarily used for two purposes, recreation and non-motorized transportation. The County of Los Angeles manages a regional trail network. Their trails are described as multi-use "riding and hiking trails," but not all of the trails are necessarily feasible for equestrian use. The City of Los Angeles' recreation trails, primarily found in parks such as Griffith and Elysian Parks, are currently limited to hiking and equestrian uses. Other local agencies have adopted trails plans and policies, often in coordination with adjacent jurisdictions to promote trail connectivity.

Trail data for this area is inconsistent because of the many agencies that manage trails. Agencies which have trail data include the Angeles National Forest, the Santa Monica Mountains Conservancy, the Mountains Recreation and Conservation Authority, Conejo Open Space and Conservation Agency, and the Los Angeles County Department of Parks and Recreation hiking and riding trails. Various municipal governments also collect trail data.

National Trails

The study area contains trails designated under the National Trails System, a network of scenic, historic, and recreation trails created by the National Trails System Act of 1968. These trails provide for outdoor recreation needs, promote the enjoyment, appreciation, and preservation of open-air, outdoor areas and historic resources, and encourage public access and citizen involvement. The study area includes all three types of national trails (*Figure 2-13: Regional Trails*).

National scenic and historic trails preserve stories that are essential to a true understanding of the American experience. Although national scenic trails and national historic trails may only be designated by an act of Congress, national recreation trails may be designated by the Secretary of the Interior or the Secretary of Agriculture to recognize exemplary trails of local and regional significance in response to an application from the trail's managing agency or organization. National scenic and historic trails within the study area include the Pacific Crest National Scenic Trail, the Juan Bautista de Anza National Historic Trail and the Old Spanish National Historic Trail. National Recreational Trails include the Gabrieleno Trail, the Los Angeles River Trail and the Silver Moccasin Trail.

Established in 1968, the Pacific Crest National Scenic Trail spans 2,650 miles from Mexico to Canada through three western states, revealing the beauty of the desert, and the Sierra Nevada, Transverse and the Cascade Ranges. In the study area, the trail traverses the Angeles National Forest entering at Cajon Pass and traversing across Blue Ridge, past Mt. Baden-Powell eventually descending to Highway 14 at Agua Dulce where it enters the Sierra Pelona. The vistas from the trail in the Angeles National Forest include the Los Angeles basin and Mojave Desert.

The Juan Bautista de Anza National Historic Trail (Anza Trail), which is managed by the National Park Service, commemorates the route followed by a Spanish commander, Juan Bautista de Anza, in 1775-76 when he led a contingent of 30 soldiers and their families through what is now Mexico, Arizona and California to found a presidio and mission





The Glendale Narrows section of the Los Angeles River Trail north of downtown Los Angeles is designated as the recreation route for the Juan Bautista de Anza National Historic Trail as well as being a designated national recreation trail. Through partnerships with local organizations, NPS has installed interpretive signs along this section of the trail. The Los Angeles River Trail and Greenway is envisioned by local agencies and communities as a recreation corridor that includes water-based recreation and trail and bikeway uses. Photos: NPS.

near the San Francisco Bay. This unit of the national park system has an auto route and a recreational route. The recreational route is currently planned along the Los Angeles River from El Pueblo de Los Angeles Historical Monument north and then west to the Simi Hills. Portions of the Anza Trail pass through SMMNRA before continuing north.

The Old Spanish National Historic Trail (Old Spanish Trail) commemorates the Santa Fe-to-Los Angeles route that sent dry goods west and horses and mules east. The Old Spanish Trail forged the first overland link to California for the east coast markets served by the Santa Fe Trail and the trade-hungry markets of Mexico and New Mexico using El Camino Real de Tierra Adentro. The trail, which is more than 2,700 miles long and crosses New Mexico, Colorado, Arizona, Utah, Nevada, and California, goes through the eastern Los Angeles region paralleling the Juan Bautista de Anza National Historic Trail before terminating at El Pueblo de Los Angeles Historical Monument.

The BLM and NPS work with partners to provide recreation, public education and interpretation, including: marking trails for public use, conducting historic and archeological research, developing visitor services and facilities, and protecting trail-related sites and segments along the historic routes.

The Gabrielino Trail follows the route of an original 1920s road that ran from Pasadena north up the canyon past wilderness resorts and old rustic cabins. The road lost its appeal after the Angeles Crest Highway was built, but today it has reinvented itself as a multiuse trail for hikers, horseback riders, mountain bikers, and birders. Much of the hike follows a gurgling stream past thick groves of live oak, sycamore, Douglas-fir, and big-leaf maple trees. Except for the first half mile, the path is almost entirely in the shade, making it a great year-round hike. Some hikers prefer to begin at the northern end of the Gabrielino Trail, heading south into the forest from Switzer Falls Picnic Area and ending at the Arroyo Seco trailhead.

The Los Angeles River Trail currently exists in segments of what will eventually be a 51-mile greenway trail. The 7-mile section that extends through the river reach called the Glendale Narrows is designated as a national recreation trail, and as the trail is extended, those reaches will also be designated. Through the Glendale Narrows, the river is more natural because the bottom of the channel was never paved, allowing vegetation to grow in the channel. Historically, the river flowed freely across a vast floodplain—varying its seasonal path by many miles—but was channelized in concrete after devastating floods in the 1910s and 1930s. Today, efforts are underway to restore ecological value to the river in order to encourage the proliferation of native species and respect to it as a natural and cultural heritage resource. This reach of the Los Angeles River Trail also serves as the Anza Trail recreation route.

An interagency trail management plan is currently being prepared for SMMNRA to address network management issues that have accrued over the years.

The Silver Moccasin Trail is the oldest designated national recreation trail and stretches 51 miles through the Angeles National Forest backcountry. The trail runs from Red Box down the West Fork of the San Gabriel River, up Shortcut Canyon and across the head of Big Tujunga to Charlton Flat and onto Chilao. From this point it follows along the Pacific Crest Highway to Mt. Baden-Powell and ends at Vincent Gap. This trail has been used by the Boy Scouts of America since 1942. Those that successfully complete the 5-day trip receive a Silver Moccasin badge.

Santa Monica Mountains National Recreation Trails

Within SMMNRA, a nearly 500-mile public trail network made up of trails and unpaved service roads is heavily used by hikers, joggers, equestrians, and mountain bikers. Many others enjoy the trails for birdwatching, picnicking, painting, and photography. An additional 100 miles of public trails are on parklands adjacent to the Santa Monica Mountains trail network; several of those trails connect to the recreation area. There are over 130 official trailheads throughout SMMNRA.

The physical pathway for the premiere east-west regional trail across the national recreation area, the 65-mile Backbone Trail system, is complete, with just two remaining private parcels to be acquired for an uninterrupted public right-of-way on the trail. Two backcountry camps exist along the Backbone Trail system, and the public has long expressed a vision for a string of such camps to allow a multi-day trek.

An interagency trail management plan is currently being prepared for SMMNRA to address network management issues that have accrued over the years. The park agencies within SMMNRA inherited many utility roads and old ranch roads that began to be used as recreation trails. The roads were not all constructed to public trail management standards, thereby incurring potential natural and cultural resource impacts. There are also some 200 miles of other unpaved roads and unauthorized trails that need to be planned for inclusion or exclusion from the public trail network. New trails have also been proposed and will be evaluated for potential resource impacts and recreational access needs.

Angeles National Forest Trails

In addition to the popular National Recreation Trails described above, the Angeles National Forest provides hundreds of miles of trails and fire roads. John W. Robinson's book Trails of the Angeles: 100 Hikes in the San Gabriels (2001) provides good descriptions of these trails. They range from strenuous to easy and provide access to historic structures, high mountain peaks and wilderness areas. With the exception of the wilderness areas, trails are generally open to mountain bikes. Equestrians also make use of the Angeles National Forest Trails. Many miles of trails are also available for off-highway vehicle use (OHV).

County and Regional Trails

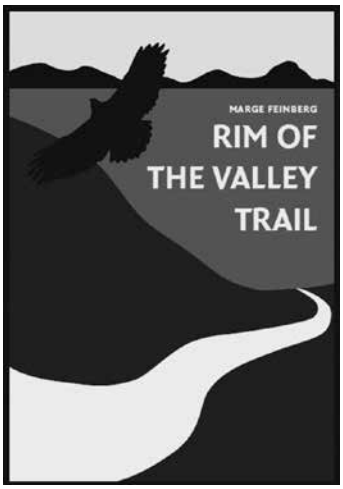
Regional trails and greenways are located throughout the study area linking various parks and open spaces. "Los Angeles County Riding and Hiking Trails" map identifies both existing and proposed trails in the county. Regional trails identified in their document include regional trails, including the Rim of the Valley Trail and Backbone Trail, which are identified as non-county trails, and the Los Angeles River Trail, which is identified as a county trail. The trails map also identifies the Santa Clara River Trail, which will include both county and local trail portions.

In addition to regional trails, the County of Los Angeles has existing and planned trails within unincorporated communities in or adjacent to the study area, primarily in the Santa Monica Mountains, the San Gabriel foothills (including the Altadena and La Crescenta areas), and the area between Sylmar and the City of Santa Clarita, and the Soledad basin. Trail planning is currently underway for the Santa Susana Mountains above the northwest San Fernando Valley area. The County of Los Angeles adopted a trails manual in 2011 to facilitate coordinated trail planning and design in the county.

Ventura County identifies several regional trails in their general plan's Public Facilities and Services Appendix (Ventura County 2007). The majority of the identified regional trails in the study area are owned and managed by other agencies, including NPS, State of California, Conejo Recreation & Parks District, Conejo Open Space Conservation Agency, and Rancho Simi Recreation and Parks



Segments of the Rim of the Valley Trail have been implemented over time, but approximately 40 percent of the trail remains unbuilt. NPS photo.



In 2003, the Rim of the Valley Trail was formally legislated to be renamed the Marge Feinberg Rim of the Valley Trail in recongition of the originator of the trail concept. Image: California State Parks, 2011.

District. The County's regional trails in the study area are planned and located in Happy Camp Regional Park in Moorpark and in Oak Park located in Simi Valley. Ventura County is currently preparing a trails master plan for the Santa Rosa Valley area, located in the western portion of the study area between the cities of Moorpark and Thousand Oaks.

Rim of the Valley Trail

Conceived in the 1970s by Marge Feinberg in her master's thesis, the Rim of the Valley Trail was envisioned as a trail that would encircle the San Fernando Valley and connect major open space areas. A master plan for the Rim of the Valley Trail Corridor was prepared in 1990 by the Santa Monica Mountains Conservancy and encompasses the entire upper Los Angeles River watershed area within the Angeles National Forest and portions of the Upper Santa Clarita River watershed, linking the Santa Monica Mountains, Simi Hills, Santa Susana Mountains, San Gabriel Mountains, Verdugo Mountains, Los Angeles River and Arroyo Seco. The trail route as planned is approximately 200 miles long and nearly 40% complete (CDPR 2011). Numerous regional and local trails connect to the Rim of the Valley Trail route. Responsible jurisdictions are Los Angeles County, Ventura County, City of Los Angeles, U.S. Forest Service, National Park Service, and California Department of Parks and Recreation (CDPR 2002).

The central loop of the planned Rim of the Valley Trail encircles the San Fernando and La Crescenta Valleys. The western section of this loop trail is bounded by the Upper Las Virgenes Canyon Open Space Preserve in the Simi Hills and Rocky Peak Road in the Santa Susana Mountains. In the Santa Monica Mountains, the trail would follow existing dirt Mulholland and continue east along Mulholland Drive to Griffith Park. From existing trails in Griffith Park, the planned Rim of the Valley Trail drops into the Los Angeles River on an existing bike trail. From there an existing bike trail leads past several pocket parks to the confluence with the Arroyo Seco near downtown Los Angeles. On the north, the Rim of the Valley Trail would cross through the Santa Susana Mountains to connect with existing trails in the foothills of the Angeles National Forest in the San Gabriel Mountains and Hahamongna Watershed Park before turning south along the Arroyo Seco. A segment of the trail also extends north through the San Gabriel Mountains to the Santa Clarita Valley.

West of the San Fernando Valley, the Rim of the Valley Trail could also include loops around Simi Valley and the Simi Hills with an extension to Happy Camp Canyon in Moorpark and Cheeseboro Canyon in Agoura. From the Arroyo Seco in the San Gabriel Mountains, the trail continues east to Eaton Canyon, Santa Anita Canyon and Mount Wilson.

The Rim of the Valley Trail could also serve as an important connection to a myriad of trails and trailheads that provide access to various communities and trail systems throughout the study area. Among the trails and trail systems that could be accessed from the Rim of the Valley Trail are those owned or operated by a number of agencies including many local municipalities and open space organizations such as the Conejo and Rancho Simi Recreation and Park Districts, the Mountains Recreation and Conservation Authority, the Santa Monica Mountains Conservancy, the State of California, the U.S. Forest Service and the National Park Service.

Bikeways

There are several types of bicycle paths and trails available in the study area. Class I bikeways feature off-street, bi-directional paved paths designated for cyclists. The Los Angeles River Trail, of which only sections have been

Trail connectivity between cities and parks exists in some areas but there are many local trails that do not extend beyond jurisdictional borders.

implemented, is an example of a Class 1 bike path. These types of bike trails also serve as regional trails and greenways, connecting communities and park areas. Other bikeways are located along streets and roads. These include Class II bikeways, on-street, one-way striped lanes designated for cyclists, and Class III bike routes, on-street preferred bicycle routes designated by signs only.

The Los Angeles County Metropolitan Transportation Authority (Metro) developed a strategic plan in 2005 to describe a vision for bicycling as a viable transportation mode in Los Angeles County. The strategic plan establishes regional bicycle planning policies and provides tools for local agencies in creating local bicycle plans (MTA 2006).

In the Ventura County portion of the study area, there are no major county bikeway facilities, but the County adopted a countywide bikeways master plan in 2007. In and near the study area, a 5.8-mile, Class I bikeway parallels Arroyo Simi through Simi Valley, providing connections to a variety of parks and open space areas from communities (City of Simi Valley 2008). Throughout the rest of the study area, most bikeways in Ventura County are Class 2 or Class 3 facilities located within roadways.

Equestrian Trails and Access

Equestrian users need strategic access points and staging areas to use the many trails available for equestrian use. Staging areas are located throughout the study area in places such as Griffith Park, Pasadena, Altadena, Tujunga, and other sites that can accommodate trailers or that connect to equestrian centers. Some examples of specific equestrian facilities include the Gabrielino Equestrian Park, Los Angeles Equestrian Center, Malibu Equestrian Park, Arroyo Simi Equestrian Center, Conejo Creek Equestrian Park, Santa Rosa Valley Equestrian Park, and Walnut Grove Equestrian Center. Most Los Angeles County trails are designated for equestrian use, and several municipalities have trails that are designated for shared use including equestrian uses. In the Ventura County portion of the study area, most trails are managed by NPS, California State Parks and local government agencies such as special districts and cities. Many of these trails are also designated for shared use.

Off-Highway Vehicle Trails

Trails for off-highway vehicle (OHV) use are found throughout the Angeles Forest in the Soledad basin. Approximately 291 miles of unpaved roads are open to OHV use on the Angeles National Forest while another 194 miles of unpaved roads are closed to such use. It is estimated that the forest has 131,965 riders annually (Chavez and Knapp 2004). As OHV use grows in popularity, management issues have arisen including use of undesignated trails, soil erosion, water degradation, habitat destruction, the spread of invasive species, damage to cultural sites and conflicts between different recreational user groups.

Trail Connectivity

Another key issue is trail connectivity, or the degree to which trails connect to each other and to open space and park resources. Connectivity relative to specific trail uses is also an issue, with jurisdictions sometimes having different trail use designations along contiguous trails. Within the study area, the Los Angeles County's regional trail system connects local parks, regional parks and national forests. Although most of the trails in the Ventura County portion of the study area are managed by other agencies, Ventura County's general plan includes policies to promote trail connectivity. The Rim of the Valley Regional Trail connects open spaces along the western San Gabriel Mountains Foothills, the Verdugo Mountains, the San Gabriel and San Fernando Valleys and the Santa Monica Mountains. This trail provides several connections to Angeles National Forest Trails. Connectivity between cities and parks exists in some areas but there are many local trails that do not extend beyond jurisdictional borders. The Metropolitan Transit Authority has identified connections for bike trails and commuter bike lanes on city streets.

Scenic Roads and Highways

The study area contains several California Department of Transportation (CalTrans) designated scenic highways, in addition to other types of scenic roads.

Angeles Crest Highway

The Angeles Crest Highway is the only major roadway that traverses the San Gabriel Mountains. The highway traverses from La Canada Flintridge through the heart of the mountains to Wrightwood, on the northeastern base.

The Los Angeles metropolitan region has struggled to provide adequate recreational opportunities for its growing urban areas since its first population boom at the end of the 19th century.

Completed in 1956, the highway was first proposed in the early 1900s to provide access to the spectacular scenery, recreation areas, historic sites, geological features and to mountain communities. In 1971 it was designated a California State Scenic Highway and in 1990 a National Forest Scenic Byway. From the highway, visitors can access campgrounds, ski areas, wilderness areas, historic sites, natural areas, picnic areas, and national recreation trails.

Arroyo Seco Parkway

The Arroyo Seco Parkway is identified as a historic parkway by CalTrans, and a National Scenic Byway by the Federal Highways Administration (FHWA). The parkway is also an historic resource. The road opened to the motoring public in 1940 when California Governor Culbert L. Olso declared the Arroyo Seco Parkway to be the "first freeway in the West." It was hailed both as a "modern" and "novel" road by state highway engineers due to its safety features. The historic Arroyo Seco Parkway was listed in the National Register of Historic Places in February 2011, designated a National Scenic Byway by the U.S. Secretary of Transportation in 2002, and designated a National Historic Civil Engineering Landmark in 1999 by the American Society of Engineers.

Mulholland Scenic Parkway and Corridor

The 55-mile Mulholland Scenic Parkway and Corridor includes Mulholland Highway in its western portion, and Mulholland Drive in the eastern portion of the corridor. The 24-mile Mulholland Drive in the City of Los Angeles, built in 1924, was envisioned by the famous Water Bureau Chief and City Engineer, William D. Mulholland, as a scenic road that would connect city dwellers to the mountains and beaches. The winding route follows the main ridge of the Santa Monica Mountains west of the 101 Freeway in Hollywood, and offers panoramic city, mountain and ocean views. Eight miles of the corridor from Interstate 405 west to Woodland Hills remain unpaved (a corridor known as "Dirt Mulholland"). Mulholland Highway starts in the City of Calabasas and twists through the western Santa Monica Mountains for thirty miles to Leo Carrillo State Park. The SMMC maintains seven scenic overlooks on Mulholland Drive (SMMC 2013).

Roads and Highways Eligible for Scenic Highways Designation

In addition to those roads and highways that have received designations, several highways through the study area have been identified as eligible for designation as California State Scenic Highways, including State Route 1 (Pacific Coast Highway) from Santa Monica west to the Oxnard Plain; State Route 27 between Pacific Coast Highways and U.S. Highway 101; U.S. Highway 101 from State Route 27 west through Ventura County; and Interstate 210 from Pasadena north to State Route 126.

Recreation Needs and Opportunities

The Los Angeles metropolitan region has struggled to provide adequate recreational opportunities for its growing urban areas since its first population boom at the end of the 19th century. Throughout the 20th century, population growth and development in the region has far outpaced the creation of recreational facilities. This has occurred despite the completion of previous comprehensive recreation studies that called for investment in more recreational facilities.

Deficiencies in recreation and open space remain for much of the Los Angeles Region. More than 18 million people live in the larger metropolitan region and the California Department of Finance projects there will be another 13 million residents by 2050 (California Department of Finance 2007a). With existing recreation and park areas in most cases already taxed beyond capacity, it is safe to assume that significant efforts will need to take place to ensure sufficient opportunities for diverse recreational experiences in the future. In addition, communities of color and children have disproportionately low access to parks and open space in Los Angeles County (The City Project 2011, Trust for Public Land 2004).

Recreation Demand in the Los Angeles Area

The large population of the Los Angeles area has created a great demand for outdoor recreational opportunities. Challenges faced by the Angeles National Forest and SMMNRA provide a snapshot of difficulties faced by residents and open space managers throughout the area.

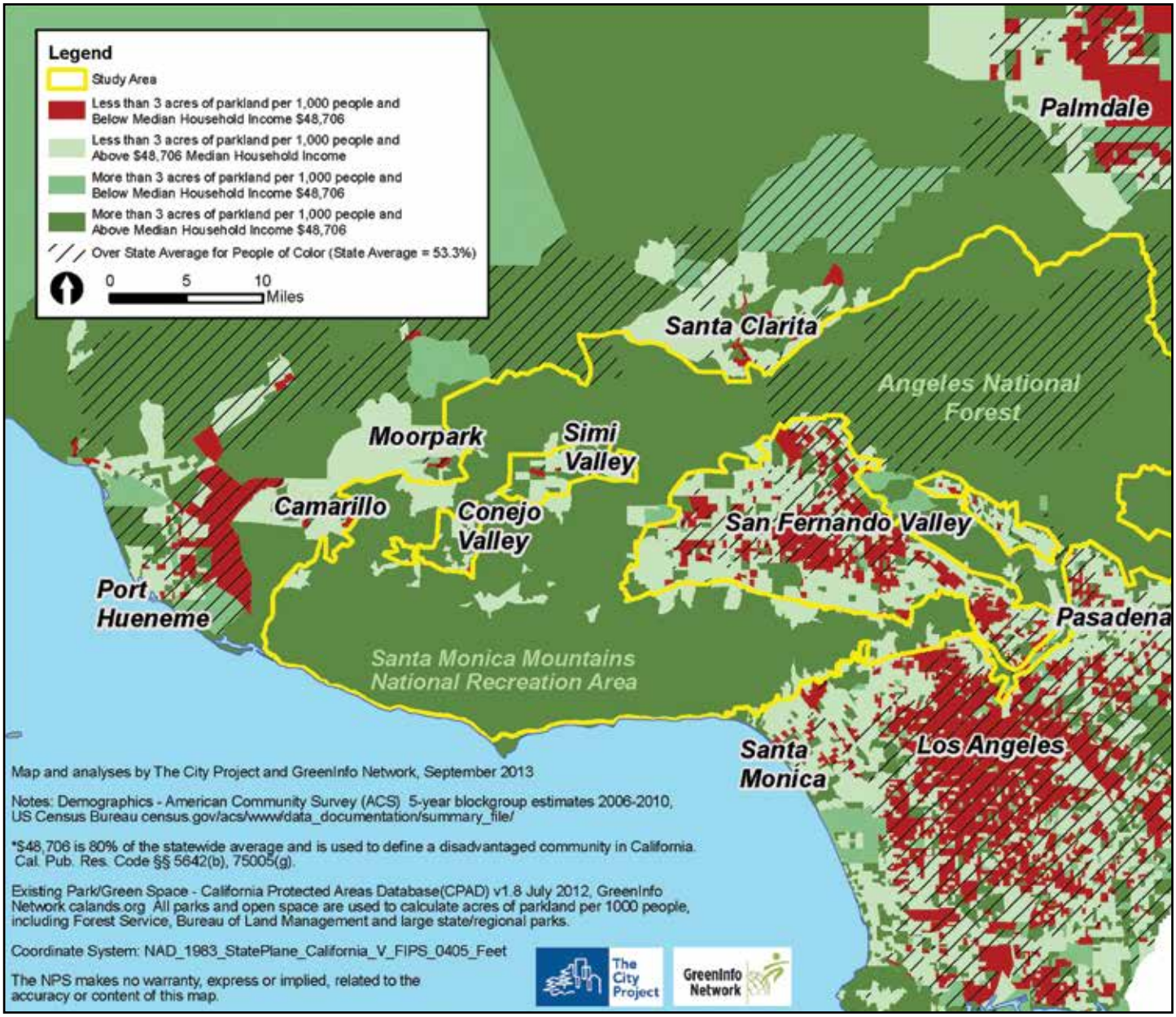


Figure 2-14: Map of Park Poverty, Income Poverty and People of Color Throughout the Study Area

With more than 15 million people within a 90-minute drive, the Angeles National Forest and San Gabriel Mountains National Monument are highly used by local residents. It is estimated that the recreational demand will increase by as much as 15-35% over the next two decades which could affect natural resource protection (UCLA Landscape Architecture Program 2006). When adjusted for inflation, non-fire operational budgets for the Angeles National Forest have actually fallen while recreation demands have continued to increase. With additional staffing and the newly designated San Gabriel Mountains National Monument, the U.S. Forest Service could expand education programs, ranger patrols, and facility maintenance (Richardson 2009).

A number of campgrounds, picnic sites, roads, and trails within the study area were also damaged by the 2009 Station Fire and subsequent erosion, further reducing available recreational facilities. Areas affected by the Station Fire have been reopening to the public based on post-fire recovery of natural resources and repair of infrastructure and facilities, but many areas remain closed and in need of additional funding (USFS 2010).

In SMMNRA, crowding is a frequent issue, particularly at popular locations on busy weekends. Parking is limited in certain sites. An increase in California State Park fees has intensified the problem of unauthorized parking and led to more parking on streets, NPS

The issue of accessibility is of particular concern when measuring existing open and park space in comparison to population densities

sites, and other lands. In addition, depending on timing and specific locations, traffic within the recreation area can become congested (NPS 2012c).

In looking ahead into the future, several demographic and societal trends will change the composition of the public visiting and using parks and open spaces, which will likely impact recreation, visitation and future stewardship in the study area. In ten years, the oldest babyboomers, still America's largest population cohort, will reach age 75 while at the same time, computer and handheld technology literacy will be almost universal. Within the same time frame, millions more children will have come of age with "nature deficit disorder," a profound lack of knowledge about the natural world resulting from restrictions on unstructured outdoor play. Perhaps most significantly, the Latino population of southern California will continue to grow. A substantial amount of 21st-century data from the NPS and the USFS confirm in various ways what can be easily observed at almost any national park or other large expanse of public land: most adult, non-school-group visitors are white.

Recreation Access in the Los Angeles Area

In addressing present and future open space concerns for the study area, disparities must be addressed regarding the disproportional access to park and recreational space. The California Outdoor Recreation Plan, prepared by California State Parks, provides a strategy for statewide outdoor recreation leadership and action to meet the state's identified outdoor recreation needs (CDPR 2009). The most recent version of this document identifies the lack of access to public park and recreation resources as a key issue affecting California. As recent reports from The Trust for Public Land and The City Project indicate, public access (predominantly of minority populations) to parks and recreation facilities is a serious concern in the Los Angeles metropolitan region (*Figure 2-14: Map of Park Poverty, Income Poverty and People of Color Throughout the Study Area*). According to The Trust for Public Land, Los Angeles County ranks at the bottom in comparison to the nation's seven major cities (Boston, New York, San Francisco, Seattle, San Diego and Dallas), in terms of providing access to parks for children. In fact, the report, based on 2000 census data, indicates that "more than 1.5 million children in Los Angeles County do not live within walking distance of a public park." and that in most cases, parks in the Los Angeles region are not located near those areas with high concentrations of young children (Trust for Public Land 2004).

Though large open space areas such as SMMNRA and the Angeles National Forest give the appearance of high per capita available recreation space in the Los Angeles area, there is a major issue with equitable access to these areas. As demonstrated in The City Project's work in Los Angeles, many families in the low income neighborhoods of the region often do not have cars nor live near public transportation systems that allow for access to regional parks. Few, if any sites, within SMMNRA and the Angeles National Forest can be accessed by public transportation, a major barrier for urban residents without a car, as well as for tourists and people with disabilities that prevent them from driving. An NPS effort to establish a fixed-route shuttle service within the recreation area some years ago was unsuccessful, though the bus stop shelters remain.

NPS researcher Daniel N. Laven in a 2008 report writes, "Researchers have found consistent and substantial evidence of the underrepresentation of racial and ethnic minorities in outdoor recreation." Theories on why this under-representation occurs range from economics to transportation access to cultural preference. For example, according to findings from U.S. Forest Service researcher Deborah Chavez, who has researched Latino usage of Angeles National Forest near SMMNRA, Latino visitors to recreation lands generally prefer more picnic tables and facilities for large family groups – and areas without these amenities will not be as popular among Latino families. In addition, some Latinos she surveyed expressed constraints such as "being uncomfortable in the outdoors," perceiving the long travel time to natural areas as too onerous, and feeling discriminated against at the site. As these trends emerge, these and related demographic changes carry significant implications and opportunities for future planning and programming at parks and open spaces.



To address urban park deficiencies, there have been ongoing efforts by a variety of public and private entities to create pocket parks, such as the first phase of Marsh Park, and other recreational amenities along the Los Angeles River. Photo: NPS.



Non-profit organizations such as Audubon California have been actively addressing the lack of access to urban nature. The Audubon Center at Debs Park in northeast Los Angeles along the Arroyo Seco provides opportunities for urban audiences to learn about nature and engage in nature-based outdoor recreation. Photo: NPS.

Opportunities

Public interest in open space and recreation in the region is significant and concerted efforts are underway by a myriad of non-profit organizations, local and municipalities, community groups, and private and public groups to procure and maintain open space in various areas throughout the Los Angeles region. Furthermore, the $2.6 billion Proposition 40 has further sparked this interest in public space allowing funds to be allocated for environmental and park projects throughout the state of California (Trust for Public Land 2004).

An inventory of open space within the urbanized portion of the study area (excluding the Angeles National Forest) demonstrates that opportunity areas exist within river and stream corridors, particularly along the Los Angeles River and its major tributaries such as the Arroyo Seco and Tujunga Wash. Underutilized land associated with these corridors provides opportunities to create pocket parks and other open space areas to transform these corridors into greenways. Examples of this can be found along the Los Angeles River, particularly through the Glendale Narrows reach, and along Tujunga Wash. More recently, pilot programs to provide seasonal, water-based recreation along the natural bottom reaches of the Los Angeles River, including the Glendale Narrows and Sepulveda Basin reaches have expanded the range of recreational opportunities.

Opportunities for further trail enhancements and connections exist throughout the study area beyond river and stream corridors, particularly with regard to the Rim of the Valley Trail. Segments of this trail have been implemented and through interagency collaboration, opportunities exist to connect these trail sections. Los Angeles County Department of Public Works has been engaged in trail planning focused on specific subregions such as the northwestern San Fernando Valley and adjacent Santa Susana Mountains area. The City of Glendale has worked with adjacent jurisdictions and agencies with land in the Verdugo Mountains to plan for trail connectivity.

Efforts to connect urban populations to natural areas while providing more close-to-home recreation and open spaces, demonstrates strategies that could be applied in the future. Regional and local stakeholders such as the state land conservancies, land trusts, and other non-profits have worked diligently in their respective efforts to maintain and acquire park and open space in the region. SMMC and MRCA, a joint powers authority that implements projects and programs for its member agencies including SMMC, work to bring natural parks and open spaces into urbanized areas while facilitating opportunities to connect urban audiences to the Santa Monica Mountains. Although much of SMMC's focus has been in the Santa Monica Mountains, the creation of natural spaces via pocket parks

along the Los Angeles River, and larger urban parks such as Vista Hermosa Park in downtown Los Angeles connects urban populations to close-to-home nature. Programs such as the MRCA's junior ranger program, children's education program, and outreach programs engage urban populations who otherwise would have limited access to natural areas. The MRCA's Recreational Transit Program provides free or low-cost bus transportation for people who otherwise would not have access to a mountain park or beach due to lack of reliable personal transportation resources, or lack of public transit that easily connects to beaches or natural areas. The Recreational Transit Program provides the critical link for over 35,000 city dwellers each year to visit the mountains and beaches.

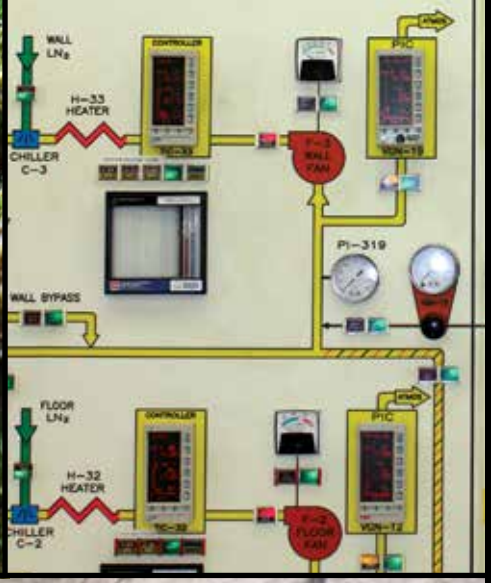
The NPS recently opened a branch office of SMMNRA through partnership with California State Parks at El Pueblo de Los Angeles Historical Monument in downtown Los Angeles. The benefits of an NPS presence in downtown Los Angeles will increase visibility and awareness of SMMNRA among city political, religious, corporate, and cultural leaders; reach out to under-served populations of all ages and ethnicities; promote SMMNRA to an array of urban dwellers as well as tourists; and offer opportunities for inspired, creative interpretive approaches that have yet to be developed. Opportunities for partnerships abound in this one-of-a-kind downtown neighborhood, and this innovative move offers the interpretive staff the chance to introduce SMMNRA to a multitude of diverse populations. Creative and strategic use of existing and future communication technologies such as social media networking will also expand opportunities to engage visitors in the region and beyond.

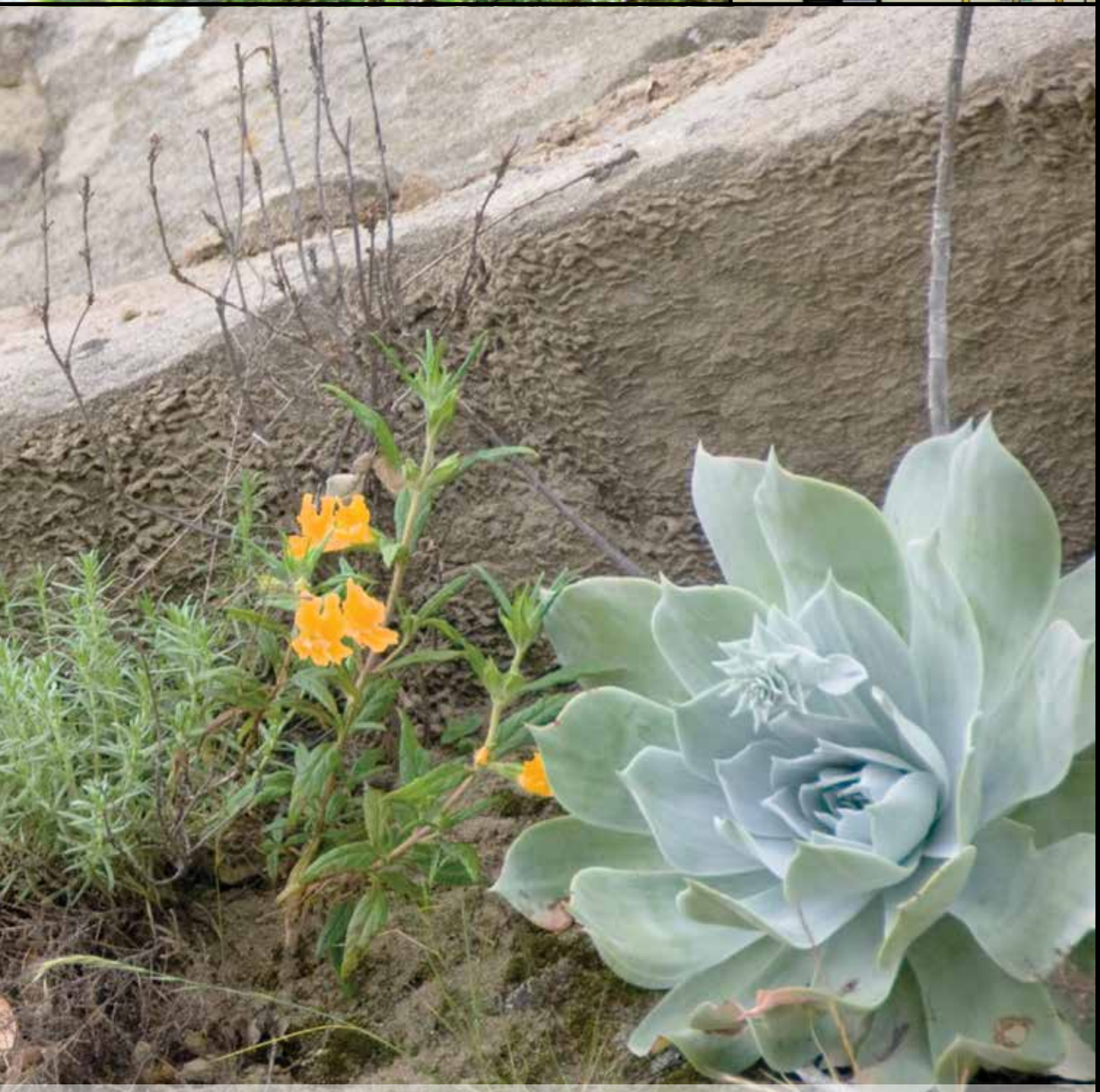
Many of these opportunities necessitate spanning political boundaries and engaging in partnerships. Barriers related to the relatively fragmented and complex jurisdictional patterns in the study area and region must be overcome so as to ensure effective and comprehensive management policies for regional recreation and open space planning.



In 2013, the Los Angeles River reach through the Glendale Narrows, was officially opened for recreation including kayaking, fishing and nature viewing. Photo: NPS.







Top left: A California newt. Top right: Control panel in the 25-foot Space Simulator facility. Bottom: Monkeyflower and dudleya in the Simi Hills. Photos: NPS (top), M.Fellows/NASA (lower).

Chapter 3: New National Park Unit Criteria Analysis

This chapter presents analyses required by Congress for areas that may be candidates for designation as a new unit of the national park system.

Introduction

Units of the national park system are managed under mandates differing from those guiding many other federal, state, and local agencies. The National Park Service (NPS) is responsible for managing certain areas to provide for public enjoyment in such a way that will leave resources "unimpaired for the enjoyment of future generations." Since the establishment of the first national park in 1872 and the National Park Service in 1916, the national park system has grown to include over 400 areas. However, the areas managed by the NPS are a small part of the broader system for protecting important places. Addition to the national park system is only one of many alternatives, and the NPS also operates several programs that help others preserve natural, cultural, and recreational areas outside of the System.

To be eligible for favorable consideration as a unit of the national park system, a property must meet four criteria. As established through The National Park System New Area Studies Act (P.L. 105-391, 16 U.S.C. Sec.1a-5) (*Appendix B*), an eligible area must meet all of the following conditions:

- possess nationally significant natural, cultural, or recreational resources
- be a suitable addition to the system
- be a feasible addition to the system
- require direct NPS management instead of protection by some other governmental agency or by the private sector

This chapter presents an evaluation of the study area based on these four criteria.

Geographic Scope

Because the study area includes an existing national park unit, the new unit criteria analysis focuses primarily on the portions of the study area outside of the existing SMMNRA boundary. However, the national significance of SMMNRA is referenced in both the significance and suitability analyses to provide context for evaluating how resources within the Rim of the Valley Corridor relate to resources protected in SMMNRA. For the portions of the study area that were previously evaluated in the San Gabriel Watershed and Mountains Special Resource Study (the San Gabriel Mountains and foothills and the Upper Santa Clara River watershed), this evaluation adopts those findings which are referenced where relevant throughout the criteria analysis.

National Recreation Areas

Some of the first national recreation areas designated in the national park system were units surrounding reservoirs impounded by dams built by other federal agencies. National recreation areas now encompass other lands and waters set aside by acts of Congress and since the 1970s have included areas close to urban centers. The National Park Service manages some of these areas under cooperative management agreements, in partnership with other agencies and organizations. The Santa Monica Mountains National Recreation Area is an example of a cooperatively management national recreation area in an urban center. Given the complexity of ownership and management in the study area, the cooperative management approach of a national recreation area would be an appropriate model for consideration of a new national park unit.

National Significance

The National Park Service (NPS) uses four basic criteria to evaluate the national significance of proposed areas. These criteria, listed in the NPS *Management Policies 2006*, state that a resource is nationally significant if it meets all of the following conditions:

- It is an outstanding example of a particular type of resource
- It possesses exceptional value or quality in illustrating or interpreting the natural or cultural themes of our nation's heritage
- It offers superlative opportunities for public enjoyment, or for scientific study

SMMNRA features some of the best remaining examples of the Mediterranean biome, a land type that is among the rarest on earth....Rich and diverse cultural resources are represented in the Santa Monica Mountains. Some 1,000 archeological sites provide insight into more than 10,000 years of Native American history.

- It retains a high degree of integrity as a true, accurate, and relatively unspoiled example of a resource

The NPS evaluates national significance for cultural resources by applying the national historic landmarks (NHL) criteria for national significance contained in 36 CFR Part 65 (*Appendix E: National Historic Landmark Criteria Sec 65.4*).

In addition to the criteria above, National Park Service professionals consult with subject matter experts, scholars, and scientists in determining whether a study area is nationally significant. Natural and cultural resource experts and scholars, locally and within the NPS, contributed expertise and documentation towards this preliminary statement of significance. In 2011 and 2012, the study team consulted local resource experts, NPS regional staff, and Santa Monica Mountains National Recreation area staff to identify resources of national significance. The following analysis describes how resources within the study area meet the national significance criteria described above.

Recognized Nationally Significant Resources

A substantial portion of the study area resources have been identified as nationally significant through previous study or designation. This includes national park or trail system designations, NPS special resource study evaluation, and national historic landmark designations (*Figure 3-1: Nationally Significant Resources*).

Santa Monica Mountains National Recreation Area

Santa Monica Mountains National Recreation Area (SMMNRA), the nation's largest urban national park, comprises approximately 153,000 acres or 25% of the study area. Congress established the national significance of Santa Monica Mountains and portions of the Simi Hills in 1978 through the enabling legislation of the national recreation area (Public Law 95-625). It recognizes the Santa Monica Mountains and adjacent coastline as an area of national significance because of its combination of natural, cultural, recreational, and aesthetic resources, and further states that, "… there is a national interest in protecting and preserving these benefits." Other values, such as air quality, the preservation of beaches, coastal uplands, historic setting, and the protection of the many undeveloped stream drainages justified establishment of the national recreation area. SMMNRA's nationally significant resources were further defined in the *General Management Plan* (NPS 2002) and more recently refined through development of a foundation document (currently underway). *Chapter 1: Introduction* provides a description of SMMNRA's park purpose and significance as defined in the foundation document.

SMMNRA features some of the best remaining examples of the Mediterranean biome, a land type that is among the rarest on earth. The mild and pleasant climate makes this biome ideal for human occupation, a significant reason why only 20% of the world's Mediterranean biomes remain intact. With one of the highest concentrations of rare species in the United States, the Santa Monica Mountains' ecosystem provides habitat for hundreds of species of plants and wildlife. Natural communities include coastal sage scrub, chaparral, oak woodlands and savannas, native grasslands, and two of the last remaining salt marshes on the Pacific coast. The Santa Monica Mountains have a particularly high diversity of fauna, particularly for birds and reptiles. SMMNRA is also notably the only national recreation area located within a mega-city (defined as metropolitan areas with a population of over ten million), that supports a reproducing population of a large carnivore (mountain lion).

Rich and diverse cultural resources are represented in the Santa Monica Mountains. Some 1,000 archeological sites provide insight into more than 10,000 years of Native American history. The Santa Monica Mountain's varied coastal and mountain landscapes, in close proximity to Hollywood, played a significant role in the film industry's transition from studio production to on-location filming. Paramount Ranch is one of the best remaining examples of the early movie ranch. The significance of the motion picture industry in the 20th century stretches beyond the borders of the United States and affects contemporary culture worldwide. Recently the significance of the high concentration of fossils contained in Santa Monica Mountains geologic formations has been recognized (Tweet 2012a).

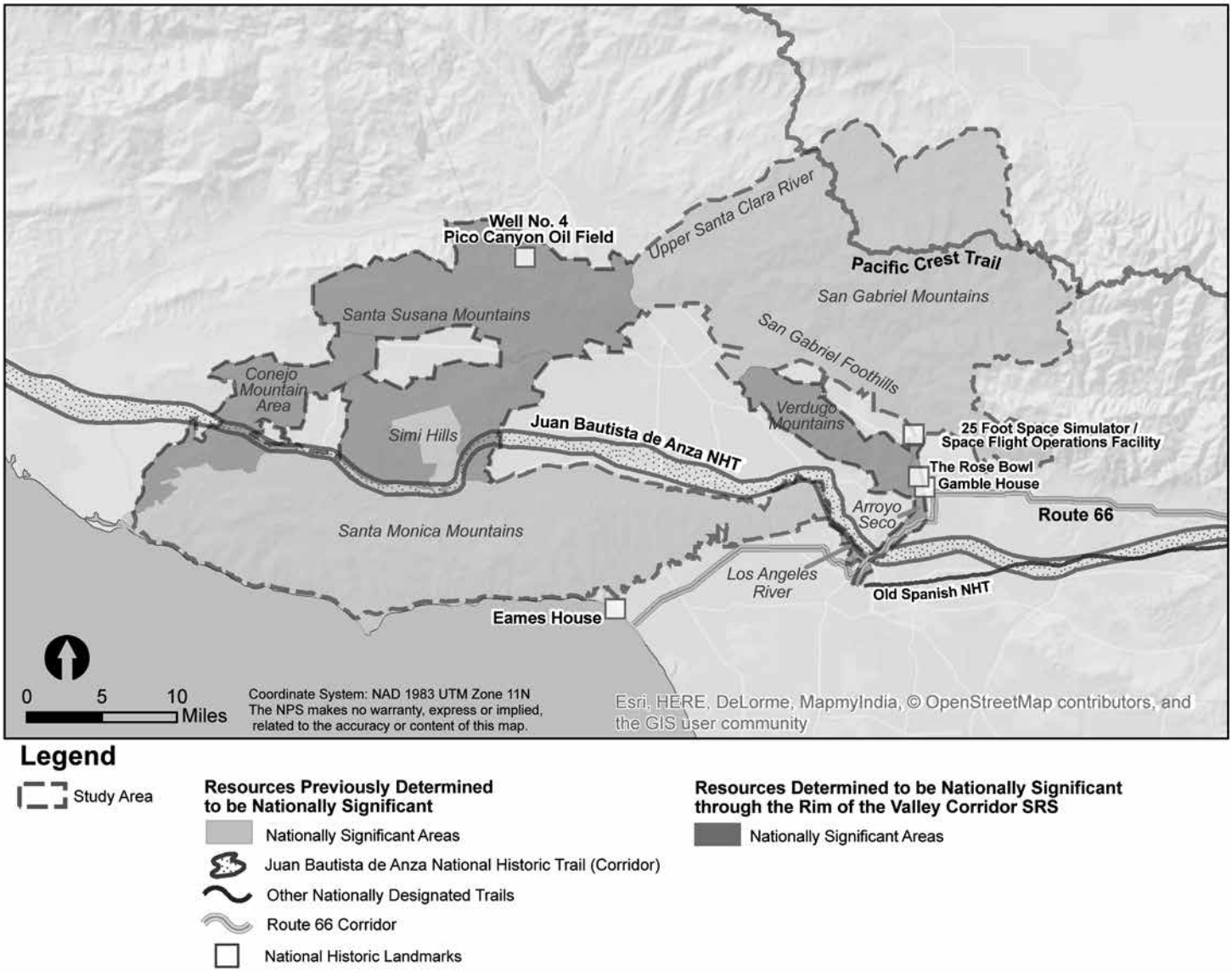


Figure 3-1: Nationally Significant Resources

One of the most geologically diverse mountain ranges in southern California, the San Gabriel Mountains are comprised of rock units from all of the major geologic eras.

San Gabriel Mountains

Through the recently completed *San Gabriel Watershed and Mountains Special Resource Study* (2013f), the NPS found the San Gabriel Mountains and foothills, including portions of the Upper Santa Clara River watershed, to be of national significance for their geologic resources and high levels of biodiversity (NPS 2013f). One of the most geologically diverse mountain ranges in southern California, the San Gabriel Mountains are comprised of rock units from all of the major geologic eras. Within the western San Gabriel Mountains this includes the most extensive, best-exposed, and most completely studied exposures of the San Gabriel Mountains anorthosite massif and the Mount Lowe plutonic suite. Some of the oldest rocks (more than one billion years old) on the west coast of the United States are located in the San Gabriel Mountains.

Within a short distance, the San Gabriel Mountains and foothills feature coastal, desert, montane, and subalpine ecological communities. This diverse landscape provides habitat for an abundance of rare and endemic plants and wildlife. In addition, the central and eastern San Gabriel Mountains contain significant waterways and riparian areas, some of which are eligible National Wild and Scenic River segments. Nationally significant cultural resources include the Mount Wilson Observatory, which includes large telescopes that were used in significant astronomical discoveries.

National Trails

Three nationally designated trails cross the study area: the Juan Bautista de Anza National Historic Trail; the Old Spanish National Historic Trail; and the Pacific Crest National Scenic Trail (Pacific Crest Trail). The Juan





Two national historic trails are included within the study area. These trails are administered by the NPS.

Bautista de Anza National Historic Trail was designated in 1990 to commemorate the 1775-76 expedition where Anza led more than 240 men, women and children on an epic journey from Nogales, Arizona to establish a settlement at San Francisco Bay. The study area includes 22 miles of the 1,200 mile long national historic trail from the Los Angeles River in the east following the northern slope of the Santa Monica Mountains west of Cahuenga Pass.

In 2002, Congress established the Old Spanish National Historic Trail to commemorate the first overland link to California for the east coast markets served by the Santa Fe Trail and the trade hungry markets of Mexico and New Mexico. The 2700-mile trail crosses New Mexico, Colorado, Arizona, Utah, Nevada, and California, and traverses the Los Angeles region paralleling the Juan Bautista de Anza National Historic Trail and terminating in downtown Los Angeles at the El Pueblo de Los Angeles Historical Monument.

Established in 1968, the Pacific Crest National Scenic Trail spans 2,650 miles from Mexico to Canada through three western states, revealing the beauty of the desert, the Sierra Nevada, the Transverse Range, and the Cascade Range Provinces. In the study area, the trail traverses San Gabriel Mountain ridgelines eventually descending to Highway 14 at Agua Dulce where it enters the Sierra Pelona.

The NPS is currently conducting a special resource study of the Butterfield Overland Trail and has determined that the trail is nationally significant, primarily for its role in linking western territories with portions of the U.S. east of the Mississippi River. Prior to September 1858, transportation and communication between the Mississippi River valley (or the east coast) and the Pacific Coast – for passengers, mail, express, and other forms of freight – took place on a twice-monthly basis via a sea route that connected to the Pacific Coast via the Isthmus of Panama. The implementation of the Butterfield route brought the disparate parts of the country together by providing twice-weekly stages to and from California; just as important, it satisfied the long-expressed need to have an overland route that ran entirely within the country's borders (NPS 2013e). The route passes through the study area at El Pueblo de Los Angeles Historical Monument, Cahuenga Pass in the eastern Santa Monica Mountains, and Newhall Pass between the Santa Susana Mountains and the San Gabriel Mountains. A separate special resource study is underway to determine the feasibility and suitability of designating the Butterfield Overland Trail as a national historic trail.

National Historic Landmarks

Six national historic landmarks (NHLs) are located within or adjacent to the study area representing topics such as architecture, space exploration, recreation, and oil production. The Gamble House NHL location in Pasadena and Eames House NHL, adjacent to the study area in Pacific Palisades, each represent outstanding examples of architecture. The Jet Propulsion Laboratory, also in Pasadena, is the location of two national historic landmarks related to innovations in space exploration (Twenty-five Foot Space Simulator NHL and Space Flight Operations Facility NHL). Nearby, the Rose Bowl NHL in Pasadena has outstanding significance in the field of recreation as the site of the oldest and most renowned post-season college football "bowl" game. Well No. 4, Pico Canyon Oil Field NHL in the Santa Susana Mountains was the first commercially successful oil well on the west coast of the United States. Finally, the Saddle Rock Ranch Pictograph site in the Santa Monica Mountains, although not formally designated, was determined eligible for national historic landmark designation by the Secretary of the Interior in 1990.

Route 66 Corridor Program

The study area includes portions of the 2,400 mile long U.S. Highway 66 which terminated in Santa Monica. Widely known as "Route 66," this historic corridor is significant as the nation's first all-weather highway linking Chicago and Los Angeles. The NPS Route 66 Corridor Program administers cost-share grants to preserve and interpret the Route 66 corridor, and provides technical assistance to public and private entities to address Route 66 preservation needs.

These nationally significant sites and areas do not need to be evaluated for national significance in this special resource study. However, their significance is referenced in the criteria analysis as it relates to resources in the remainder of the study area.

The mild climate of the Los Angeles region which supports a high diversity of species has also made the region attractive to a diversity of cultures from all over the world.

Through this process, the NPS determined that the remainder of the study area also contains nationally significant resources, many of which magnify the importance of resources previously identified as nationally significant. As such, the study area as a whole has national significance. The following analysis describes how the study area resources meet the national significance criteria.

Summary of National Significance of the Rim of the Valley Corridor Study Area

The topographically and geographically complex study area contains a mosaic of natural communities that span coastal and montane ecosystems and support high levels of biodiversity. Plant communities range from coastal sage scrub in the coastal valleys and foothills, to unique woodland habitats in the Santa Susana Mountains, alluvial scrub habitat of Tujunga Wash, rich riparian habitat of the Santa Clara River, and marine ecosystems along the Santa Monica Mountains coast. The region also has a long history of human use with a wide range of historical and archeological resources.

Due to extensive urbanization in the Los Angeles region, many native plant communities and their associated wildlife are now rare, threatened or endangered. The intersection of biological resources and urbanization has made the southern California coastal region the most-threatened biologically diverse area in the continental United States (CDFG 2007). Southern California has been identified as a "hotspot" for biodiversity due to the high diversity of imperiled species (Stein, Kutner and Adams 2000).

In 1973, the National Park Service conducted a comprehensive survey of natural history in California and identified sites with national significance that would be eligible for National Natural Landmark designation. This survey found that for areas in the Transverse and Peninsular Ranges, "*Much of the mountainous areas lack intensive agriculture or dense urbanization, unlike the lowland valleys and floodplains of this area*." These upland sites are in many cases the sole remnant of the pristine landscape" (NPS 1973). This statement remains true today.

The mild climate of the Los Angeles region which supports a high diversity of species has also made the region attractive to a diversity of cultures from all over the world. More than 10,000 years of human habitation are represented in the cultural resources found within the study area. Climate and landscape inspired significant migration to southern California, in the 19th and 20th centuries and plays an important role in the cultural significance of the study area. Great engineering feats were undertaken to transform the physically isolated Los Angeles area into a growing metropolis. As described by Sam Hall Kaplan in his architectural history of Los Angeles, "*tourism and health brought many to the region, transport of water allowed it to grow, oil production spurred progress, transportation systems gave it its shape, and the movie industry propelled it into the consciousness of the world*" (Kaplan 1987). The study area contains an impressive collection of cultural resources of varying degrees of significance – from local to national historic landmarks. More than 1,700 archeological sites and hundreds more historic sites and features are located within the study area.

The nationally significant resources of the study area fall into five broad subject areas:

1. mountain building and geologic resources;
2. diverse record of paleontological resources including a complete, intact record of fossils from the Cenozoic Era;
3. biodiversity of Mediterranean ecosystems;
4. archeological resources representing more than 10,000 years of human occupation, including Chumash rock art from the era of first European contact; and
5. nationally significant historical sites representing a wide range of cultural themes.

Criterion 1: Outstanding Example of a Particular Type of Resource

Mountain Building and Geology: The Transverse Ranges Province

Although most mountain ranges in the continental United States trend north-south, the

mountain ranges in the study area trend east-west. The Transverse Ranges are the result of a unique ninety degree rotation caused by the land block getting stuck under the North American Plate and pushed clockwise by the Pacific Plate.

The geologic resources of the study area that best tell the Transverse Ranges "twist" story include the Conejo Volcanic complex rocks surrounding the Conejo Valley, and the rock formations in the Santa Monica Mountains that were used for the paleomagnetic testing that confirmed the 90° rotation. The east-west trending Simi Hills, the Santa Susana Mountains, the San Gabriel Mountains, and the Verdugo Mountains also contribute to this unique geologic story.

The San Gabriel Mountains are among the fastest growing mountains in the world. The San Gabriel Mountains are nationally significant as an outstanding location to research or study mountain building. Forces from the San Andreas Fault to the north and a series of thrust faults on the south are causing the San Gabriel Mountains to rise an average of 2 inches a year. Because they are one the youngest mountain systems on the west coast, the Santa Susana Mountains further contribute to understanding active mountain building in the region.

Paleontological Resources

Paleontological resources are fossilized remains of non-human organisms. Most paleontological sites include remains of species that are now extinct. Southern California has important paleontological (fossil) resources that are sought by collectors, universities, and museums.

As described in *Chapter 2: Resource Description*, the study area contains a remarkably diverse assemblage of paleontological resources. As a collection, the marine and terrestrial specimens collected from Los Angeles and Ventura County sites within the study area and now curated at the Los Angeles County Museum of Natural History and other locations provide the most diverse and complete record of the paleo-ecology of the Southwest Pacific Rim during the Cenozoic Era. Due to their location at the edge of the continent and their formation in a warmer more southerly climatic zone, these sites alternated between deep and shallow marine and terrestrial environments and include some of the most productive and diverse fossil sites in the United States in terms of the quality, quantity, diversity of species found and geologic eras represented.

High Levels of Biodiversity

The topographically and geologically diverse study area contains exceptionally high levels of biodiversity including outstanding examples of Mediterranean-type plant communities, rare and sensitive plant and animal species, and endemic species that occur nowhere else (*Table 3-1: Species Endemism within the California Floristic Province*).

Table 3-1: Species Endemism within the California Floristic Province

	Species	Endemic Species
Plant species	4426	2125
Vertebrate species	584	71
Bird species	341	8
Mammal species	145	30
Reptile species	61	16
Amphibian species	37	17

Source: Myers et al. 2000

Since the 1980s, the concept of biodiversity hotspots has become an essential tool for setting conservation priorities throughout the world. These hotspots are defined as areas harboring exceptional concentrations of living species especially those found nowhere else on Earth (i.e. endemic species) and which are undergoing exceptional loss of habitat. Based on these criteria, the area defined as the California Floristic Province has been identified by leading ecologists as one of 25 global biodiversity hotspots that collectively support more than 60% of the Earth's total biodiversity (Myers et al. 2000, CBI 2001).

The California Floristic Province is one of five floristic provinces in the world defined by the Mediterranean-type climate. All five of these provinces, including the California Floristic Province, and those found in the Cape Region of South Africa, central Chile, southwestern Australia, and the Mediterranean basin are considered global biodiversity hotspots, each with an exceptionally high proportion of endemic plants.

Of these five Mediterranean-type climate influenced areas, the California Floristic Prov-



The diversity in elevation, microclimates, and microhabitats has resulted in a diverse mosaic of vegetation and habitats in the study area. In the upper Santa Clara River basin (above) elements of vegetation found in the San Gabriel Mountains and foothills, and species associated with the Mojave Desert are found. Photo: NPS.

With their intact, species-rich Mediterranean shrubland communities, the upland areas of Ventura and Los Angeles Counties harbor some of the region's most intact concentrations of biological diversity.

ince has the greatest diversity of soil types and moisture regimes and supports one of the richest plant assemblages in the world, including about 25% of all plant species occurring north of Mexico, approximately half of which are endemic to the province (Stebbins and Major 1965; Raven and Axelrod 1978, Mittermeier et al. 1999). Today, less than 25% of the original vegetation in the floristic province remains (Myers et al. 2000).

A closer look at biogeographic patterns shows southern California to be a hotspot within a hotspot. The largest number of endemic species in the California Floristic Province occurs within southern California (Ornduff 1974). The region supports more than 30% of California's native plant species while comprising less than 10% of the land area (CDFG 2008). More endemic plant and animal species occur in this ecoregion than any other ecoregion in the country (Stein, Kutner and Adams 2000). At a national level, the south coastal area of California has been identified as a hotspot for nearly every group of species, including plants, invertebrates, birds, mammals, and reptiles (Wilcove et al. 1998). Since the government began listing species as threatened and endangered in the 1970s, the south coastal area of California is the only region to meet the criteria of a hotspot during that entire period of time (Rutledge et al. 2001).

As described in *Chapter 2: Resource Description*, this species richness and high endemism is contained within and supported by a comparable diversity of vegetation assemblages. With their intact, species-rich Mediterranean shrubland communities, the upland areas of Ventura and Los Angeles Counties harbor some of the region's most intact concentrations of biological diversity. Conservation of these upland areas is the key to regional habitat connectivity, especially for species-rich, but increasingly isolated areas such as the Santa Monica Mountains.

The native plant and animal species found in the Rim of the Valley Corridor study area demonstrate the biodiversity of this Mediterranean climate, southern California hotspot. Elevations within the study area vary from sea level on the coast of Malibu to Mount Gleason (6,540 feet) in the San Gabriel Mountains. As a result, the study area includes a broad range of elevation, microclimates, and microhabitats that results in a diverse mosaic of vegetation and habitats. Spatially complex environmental factors, such as diverse topography, geology, soils, precipitation, and temperatures, coupled with dynamic fire and land use history, create a broad range of vegetation and habitat types that are unique to the region, many of which also support federally listed plant and animal species (Conservation Biology Institute 2001, Barbour et al. 2007, Keeler-Wolf et al. 2007, Keeler-Wolf et al. 2010).

In addition to containing rare habitat and sensitive plant and animal species, the study area also includes sites identified as being evolutionary hotspots for multiple species, where the potential for evolutionary processes that control levels of biodiversity is high (Vandergast et al. 2008). Of the five "evolutionary hotspots" identified, the Sierra Pelona area, adjacent to the northern edge of the study area, and portions of the San Gabriel Mountains that connect to the Rim of the Valley Corridor, highlight the importance of connectivity for these biological resources.

The wide range of cultural sites and landscapes reflect the area's unique history and development which has been shaped and influenced by its geography, natural resources, varied landscapes, and Mediterranean climate.

Diversity of Cultural Resources

As described in *Chapter 2*, the study area contains every major prehistoric and historic theme associated with human interaction and development in the western United States. Historical themes range from California's earliest exploration and settlement by Spain, to its subsequent administration by the Republic of Mexico, as well as the course of Los Angeles' urbanization, from citrus groves to tract homes by way of oil development, motion pictures, innovations in space exploration and defense, and freeways. The wide range of cultural sites and landscapes reflect the area's unique history and development which has been shaped and influenced by its geography, natural resources, varied landscapes, and Mediterranean climate. Modern-day residents continue to make unique cultural contributions to the nation as a result of their special relationship to the climate and landscapes of southern California. *Tables D-8* through *D-11* in *Appendix D: Resource Inventories* contain a comprehensive listing of these resources. Numerous cultural resources within the study area have been previously identified as nationally significant through national historic landmark (NHL) designation or evaluation or through national park or national historic trail designation. These recognized resources are referenced to provide context for the overall cultural significance of the area. The following section describes outstanding examples of cultural resources within the study area.

Native American Archeology

Archeological resources in the study area boast a rich and colorful history with a record of more than 10,000 years of human occupation. This record is contained in some 1,700 archeological sites that provide excellent opportunities to understand cultures that have lived in the area. Over time, the complex and advanced cultures that inhabited the area developed large villages, which included extensive trading and monetary systems, astronomical knowledge, exquisite basketry, stone and wood carvings, and a legacy of sacred pictographs (NPS 2002). Today, one of the largest Native American Indian populations in the world, representing virtually every tribe, lives within easy access of the study area.

Regional archeologists have noted that the study area as a whole has some of the oldest discovered sites in California (Barbara Tejada, pers. comm., 2012), which contributed to the definition of prehistoric chronologies used today. Although the Channel Islands contain some of the region's most pristine sites, many of the study area sites are better preserved and represent successive periods of history. For example, the oldest known reference of rock art in the study area was documented by J.P. Harrington in 1917 and the first published discussion of rock art in California by Alfred Kroeber in 1925 mentioned a site in Los Angeles County (Knight 2001). The Tank Site (CA-LAN-1), located within Topanga State Park, is one of the oldest identified sites in the region (1946) and defined the milling stone period in this area. This site is used by archeologists as the defining location for early archaic cultures in southern California. The Little Sycamore Shellmound, located within Leo Carrillo State Park, is also important as a defining site for early archaic cultures (NPS 2002). The analysis of these resources can provide valuable information relative to the cultural heritage of the region.

Archeological resources in the Santa Monica Mountains are nationally significant and feature one of the highest densities of archeological sites found in any mountain range in the world. Many archeological sites in the Santa Monica Mountains have been listed or determined eligible for listing in the National Register of Historic Places. Of particular note is the area's Chumash rock art, considered to be some of the most interesting and spectacular in the United States (Heizer and Sturtevant 1981). The Saddle Ranch Pictograph Site, in the Santa Monica Mountains was determined to be potentially eligible for designation as a national historic landmark in 1990 by the Secretary of the Interior (NPS 2012b). These resources are described in more detail in *Chapter 2: Resource Description*.

Numerous significant sites determined eligible for listing in the national register are located in U.S. Forest Service managed areas in the western San Gabriel Mountains and foothills. These sites provide strong evidence of long-term occupation, seasonal encampment, resource procurement, and processing and storage sites, and regional trade networks (USFS 2005). The Simi Hills and Susanta Susana Pass area also contain archeological resources of



One of the largest Native American Indian populations in the world, representing virtually every tribe, lives within easy access of the study area. Satwiwa Native American Culture Center in SMMNRA serves as a destination for a broad range of American Indian groups from across the nation. Satwiwa is a learning center for all people to share traditional and contemporary indigenous lifeways. Photo: NPS.

note, particularly with regard to rock art displays at the Burro Flats site.

Areas that are still largely undeveloped and have not been extensively surveyed provide great potential for scientific discovery. These areas include the Santa Susana Mountains, Upper Santa Clara River, portions of the Simi Hills, and Conejo Mountain/Las Posas. Despite the lack of formal survey and evaluation, several hundred archeological sites have been documented in these areas. Sites listed or determined eligible for listing in the National Register of Historic Places in these areas are described in more detail in *Chapter 2: Resource Description*.

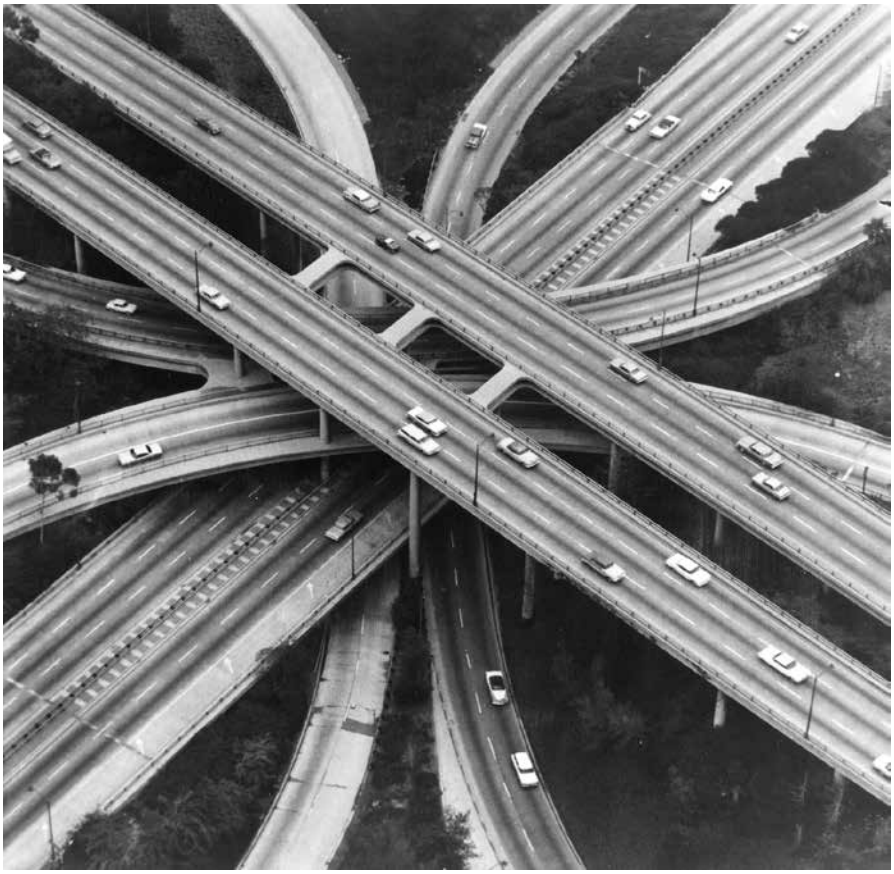
Migration and Settlement

Historic trails and migration routes played a significant role in the settlement of the region. Most routes used by early Europeans in California followed existing Native American transportation corridors. In part, this reflected the natural geography of the region, bounded by several mountain systems, which provided only a limited number of practical alternatives for Indigenous people and Europeans settlers alike. Several of these important routes have already been designated national historic trails. The Juan Bautista de Anza National Historic Trail, managed by the NPS, is significant for its role in the early settlement of California by the Spanish. The Old Spanish National Historic Trail, also managed by the NPS, terminated in Los Angeles and was important to developing the economy of the Mexican Southwest.

Route 66 was determined significant through a National Park Service special resource study as the nation's first all-weather highway linking Chicago to Los Angeles, underscoring the importance of the automobile and unprecedented mobility of Americans. The portion of U.S. Highway 66 within the study area is primarily the Arroyo Seco Parkway whose significance as it relates to transportation and engineering is described below.

Transportation, Communication, and Civil Engineering

Although today airplanes and automobiles have made travel to and from Los Angeles practically effortless, natural barriers once posed such a substantial challenge that they effectively limited any significant immigration to the region until well into the nineteenth century. Inland, vast deserts extend for hundreds of miles beyond the wall of encircling mountains, confining much of southern California as if it were an island perched on the western edge of the continent. To the northeastward, a tangle of rugged coastal hills covered with dense brush made overland travel up or down the coast from other population centers difficult. To the southward, the ocean seemed to promise a better alternative for travel, but the region's coastline offered no natural harbors. The Los Angeles basin was also poorly supplied with one of the most essential resources needed by a populous civilization—fresh water. The inadequacy is not a matter of simple



The four-level interchange that is part of the Arroyo Seco Parkway was an innovation in highway engineering as the "world's first freenway-to-freeway connector." Photo: Modernage Photo Service, Inc., Security Pacific National Bank Collection/Los Angeles Public Library.

scarcity, however. Depending on the time of year, or the year itself, the region can even have too much water in one place and too little in another at the same time causing dramatic periods of flooding.

Great engineering works became necessary for the growth and development of Los Angeles. The city's isolation was eliminated with the introduction of transcontinental railroads and highways, which connected Los Angeles to the rest of the country. The region's arid environment, which supplied far too little water to sustain a major city, was overcome with the importation of water from distant sources. These interbasin transfers would eventually give Los Angeles an effective watershed comprising most of the American west. And finally, the floods which periodically inundate the Los Angeles basin, or bury it in sediments, would be channelized and confined within an elaborate system of dams, reservoirs, and concrete canals. All of this engineering would make it possible for one of the world's most populous and cosmopolitan of cities to emerge and flourish.

Nationally significant resources related to this topic include Route 66 and the Butterfield Overland Trail. The implementation of the Butterfield Overland Trail route brought the disparate parts of the country together by providing twice-weekly stages to and from California and established an overland route that ran entirely within the country's borders (NPS 2013e).

There are several resources related to this topic that may be nationally significant for innovations in transportation and engineering but warrant further analysis to determine eligibility for national historic landmark nomination. These resources include the Arroyo Seco Parkway and resources related to water conveyance and flood protection systems. Constructed between 1928 and 1953, the Arroyo Seco Parkway marked a significant turning point in the history of roadway design and development in the west. During the initial phase of the parkway's construction, engineers incorporated landscaping and native plants into the overall design while implementing safety features designed for high speed traffic. The culmination of the freeway with its connection to the first four-level freeway interchange in the world appears to be nationally significant. The four-level interchange is a National Civil Engineering Landmark. Completed in 1949, the four-level interchange was the "world's first freeway-to-freeway connector." It is recognized by the American Society of Civil Engineers as the prototype "direct" or "freeflow" interchange. The structure's completion was necessary for connection of the Arroyo Seco Parkway to the Los Angeles freeway system (Gruen and Lee 1999, California Department of Transportation 2006, Calpo 2011).

Currently, the four-level interchange is identified as a contributor to the historic district at the state level, but it is individually eligible for the National Register of Historic Places at the state and national level of significance (Scott and Calpo 2012). Additional evaluation is needed to determine if the Arroyo Seco Parkway with the innovation of the four-level interchange would be eligible for designation as a national historic landmark.

As described in *Chapter 2*, the study area contains a wide range of resources that reflect efforts to store and transport water, includ-



The Zanja Madre, conveying water from the Los Angeles River to the Plaza, was used for drinking water, irrigation, and washing (shown, ca. 1900). Portions of the Zanja Madre remain today. Photo: Security Pacific National Bank Collection/Los Angeles Public Library.

ing sections of the historic Zanja Madre (the original water systems that supplied El Pueblo de Los Angeles and continued to transport water regionally through the American Period), key components of the California Aqueduct, and numerous dams and reservoirs created for water storage (e.g. Franklin Canyon Dam, Chatsworth Dam, Encino Reservoir). Portions of the Los Angeles Aqueduct and associated infrastructure that carry and store water from the Owens Valley are also located throughout the study area.

Resources associated with the Los Angeles County Flood Control System, a comprehensive and coordinated flood control system constructed by the U.S. Army Corps of Engineers and the Los Angeles County Flood Control District, are located throughout the study area. The Los Angeles County system was the first and largest program to receive funding under the Flood Control Act of 1936. The system includes dams, debris basins, spreading grounds, diversion tunnels, outlets, inlets, guide walls, gates, and spillways. A U.S. Bureau of Reclamation theme study on large federal dams determined that the Los Angeles County Flood Control System might be nationally significant for its impact on the history and development of the greater Los Angeles metropolitan area (Billington, Jackson, and Melosi 2005). Further study is needed to identify which resources contribute to the national significance of the water conveyance and flood protection systems and to document the integrity of contributing resources. *Tables D-12* and *D-13* in *Appendix D* contain a description of related resources within the study area.

Energy Development

Energy development is an important aspect of the economic development of southern California. Southern California's abundant supplies of oil would support its rapid economic growth through the twentieth century, shifting the balance of population and political power within the state from north to south.

Well No. 4, Pico Canyon Oil Field in the Santa Susana Mountains was designated as a national historic landmark in 1966. As the first commercially successful oil well on the west coast of the United States, Pico Well No. 4 represents the thematic topic of extraction and production. Because of training in the Pico Canyon field, oil industry pioneers made California the second oil -producing state in the United States in the first two decades of the 20th century (Snell 1963).

Innovation in Science and Technology

The Los Angeles region has been the center of technological innovations related to space exploration, aeronautical engineering, cold war-era missile systems, and astronomical discoveries. The climate of the region favored aeronautical advancements because the weather conditions made it possible to fly at nearly any time of the year. By the end of the World War II, southern California would be an important center not only for advanced aeronautical design, but also for rocketry and guided missile technologies, which would play an important role in the emerging Cold War. Having high altitude mountain systems in close proximity to a large urban area with research institutions such as the California Institute of Technology (Caltech) created excellent opportunities for the construction and use of observatories. The study area contains a number of nationally and potentially nationally significant sites related to innovations in space exploration, defense, and astronomy.

Man in Space National Historic Landmarks

The *Man in Space National Historic Landmark*



The Jet Propulsion Laboratory (JPL) campus, located along the Arroyo Seco at the base of the San Gabriel Mountains, is home to two national historic landmarks and continues to serve as a major NASA site operated in partnership with the California Institute of Technology. Photo: City of Pasadena.

Theme Study (NPS 1984) identified 24 surviving facilities which best represented the most important efforts in space exploration since the American Space Program was initiated in 1958. The American manned space program was an expression of Cold War values and emerged out of the competition between the United States and the Soviet Union for dominance—both literal and symbolic—of near-Earth space. It also used technologies which were developed specifically for military applications during World War II and later deployed against the nation's perceived communist adversaries during the early years of the Cold War. At the same time, the American manned space program is also related to the theme of "Astronomy and Astrophysics" because of its direct contribution to the furtherance of knowledge within these scientific disciplines and because of its indirect contribution, through technological advancement, to future scientific discoveries which would result, for example, from the numerous deep space probes developed and managed by National Aeronautics and Space Administration (NASA) and the Jet Propulsion Laboratory (JPL) in Pasadena (Butowsky 1984).

Many associated resources have long since been destroyed, abandoned or altered to meet the changing demands of the space program. Two of the 24 surviving facilities are located within the study area in the Arroyo Seco corridor, the Space Flight Operations Facility and the Twenty-five Foot Simulator, both located at JPL in the Arroyo Seco corridor. From the beginning of its association with NASA in 1958, JPL has served as the primary NASA center for the unmanned exploration of the planets.

The Space Flight Operations Facility is the hub of the communications network through which NASA controls its unmanned spacecraft flying in deep space. This facility is where spacecraft tracking and scientific data are received and processed from JPL's Deep Space Network. The Twenty-five Foot Space Simulator was built in 1961 and is the only NASA facility capable of producing high-quality space simulation for testing spacecraft under conditions of extreme cold; high vacuum; and intense, highly uniform, solar radiation. Both of these sites are national historic landmarks, and are described in greater detail in *Chapter 2: Resource Description*.

Cold War Historic Resources

A recently completed theme study on Cold War defensive sites found that because the Cold War era (1945–1991) is so recent, and the universe of potentially related properties is so vast, relatively few such properties have been identified, designated as national historic landmarks, or listed in the National Register of Historic Places. The majority of properties are fewer than fifty years old, and many have been demolished as sites have been deactivated or have been so altered as to be lacking in sufficient integrity for designation or listing. Although a few surveys have been made and several historic contexts have been written, there is an urgent need for more study and documentation because the resources are disappearing (Salmon 2011).

Santa Susana Field Laboratory Sites

The site known as the Santa Susana Field Laboratory (SSFL) comprises 2,850 acres in the Simi Hills, and was used for research and testing throughout the entire span of the Cold War era. *Chapter 2: Resource Description* includes a history and detailed description of the site. Recent surveys at NASA's SSFL have identified nine individual sites and three historic districts related to the Cold War era as eligible for listing in the National Register of Historic Places (NASA 2009). The three eligi-





Nine sites and three districts at Santa Susana Field Laboratory have been identified as eligible for listing in the National Register of Historic PLaces. The three districts include the Alfa, Brava and Coca Test Areas that include rocket engine test stand structures and may be eligible for national historic landmark status upon further investigation (NASA 2009). The Alfa (shown left) and Brava test stands are proposed for possible retention, while the Coca test stands (shown right) are proposed for demolition due to contamination (NASA 2014). Photos: NPS.

ble historic districts would comprise the Alfa, Bravo, and Coca Test Areas are significant in association with the historic contexts of the Cold War and space exploration. The relevant properties and districts may be eligible for designation as national historic landmarks upon further evaluation (NASA 2009). Two (Alpha and Brava) are proposed for possible retention in NASA's recent *Record of Decision* regarding environmental cleanup activities at the Santa Susana Field Lab, while the third (Coca), is proposed for demolition due to contamination (NASA 2014).

Other Study Area Cold War Sites

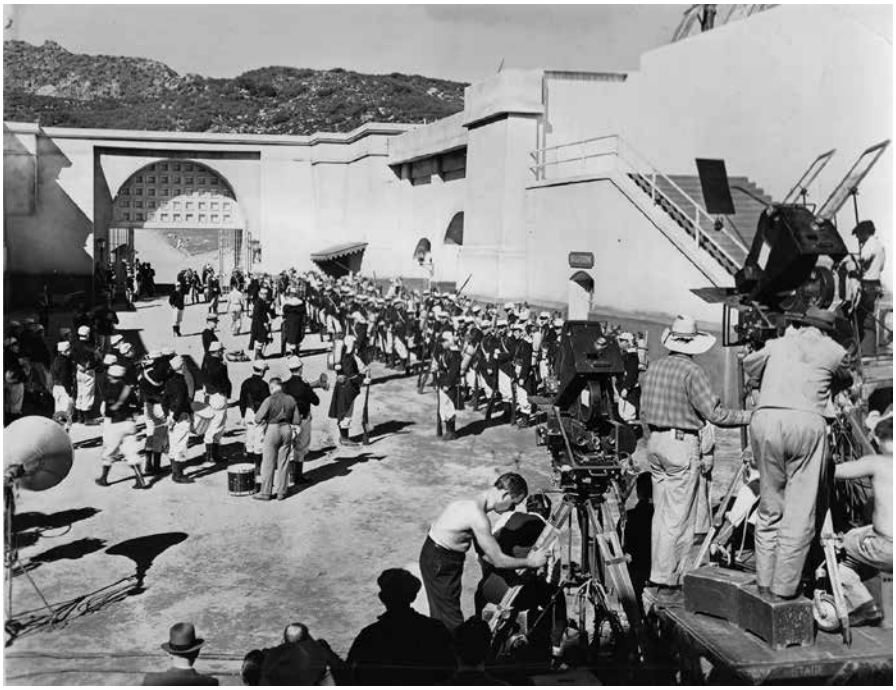
The study area contains other recognized resources that relate to science and technology, including Nike missle sites and the Thompson-Ramo-Wooldridge laboratory in Solstice Canyon (SMMNRA), an important site of early pioneering space research. These resources are described in more detail in *Chapter 2: Resource Description*.

Astronomical Research

The Mount Wilson Observatory in the San Gabriel Mountains is the site of significant astronomical acheivements, particularly with the use of the 100 inch Hooker telescope, as described in *Chapter 2: Resource Description*. The observatory was identified in a 1989 national historic landmark theme study as one of several sites potentially eligible nationwide under the theme of "Astronomy and Astrophysics". Although a nomination was submitted at that time, the site has not been listed in the National Register of Historic Places or designated a national historic landmark. The Griffith Observatory in the Hollywood Hills, inspired by the Mount Wilson Observatory, has also been determined eligible for listing in the National Register of Historic Places.

Architecture and Urban Design

The mild climate, topography, and diverse mix of people and cultures in the Los Angeles region inspired varied styles and new innovations in architectural styles and structures. The study area reflects a wide range of properties associated with significant examples of architecture, landscape architecture, and urban design, containing hundreds of structures and historic districts listed, or eligible for listing, in the National Register of Historic Places and two national historic landmarks. Many more national historic landmarks designated for their architectural significance are located very near the study area. The City of Los Angeles is in the process of conducting a survey of historic resources. The survey process (Survey L.A.), which is nearly complete, has identified hundreds of structures with architectural significance.



The Santa Monica Mountains have been the venue for hundreds of films, including "Beau Geste" (1939) shown being filmed above. Photo: Bison Archives.

The Santa Monica Mountains and adjacent foothills alone contain 600 of the more than 2,000 architecturally significant buildings identified in Gebhard and Winter's book *Architecture in Los Angeles* (1985). Frank Lloyd Wright, Richard Neutra, Paul Williams, Charles Eames, and Wallace Neff are just a few of the architects with significant design accomplishments in the Santa Monica Mountains (NPS 2002). The impressive collection of architecture throughout the study area provides an excellent opportunity to express how the region's climate, landscape, fascination and reliance on the automobile, and diverse population influenced architecture on a national scale.

As described in *Chapter 2: Resource Description*, particularly notable properties in the study area include the Gamble House National Historic Landmark in Pasadena, known for its Arts and Crafts architecture, and houses associated with the Case Study House Program which is significant for its efforts to introduce modern domestic architecture the broader public following World War II. The most iconic examples of the Case Study House Program were the Eames House (Case Study House #8) in Pacific Palisades and Pierre Koenig's Case Study House #22 (Stahl House) in the Hollywood Hills. These steel-framed houses were widely publicized by photographer Julius Shulman. Shulman's dramatic photo of Case Study House #22 (the Stahl House), cantilevered atop a hill overlooking Los Angeles, made this house the recognizable image symbolizing the entire program (Moruzzi 2013). The Eames House National Historic Landmark is adjacent to the study area, while another seven Case Study Program houses within the study area, including the Stahl House, have been listed in the National Register of Historic Places.

Film Industry

The study area is primarily significant for its role in the transition from studio to location filming as the growing film industry took advantage of the area's mild climate and wide range of landscapes and architectural styles. *Chapter 2: Resource Description*, the section "Historic Context" includes a brief overview of the history of film in the Los Angeles area. When the film industry began to export the Hollywood version of American culture to the world, the Santa Monica Mountains became the venue for hundreds of films. The continued use of the Santa Monica Mountains for film production preserves a 75-year tradition of film-making at Paramount Ranch (determined eligible for listing in the National Register of Historic Places). This site in SMMNRA is held by some historians to be the nation's best remaining example of a film production facility from Hollywood's 'Golden Era of Motion Pictures.' Other portions of the study area, particularly in the Simi Hills, Santa Susana Mountains, and the Santa Clarita Valley were also used extensively for film production. For example, Corriganville Ranch, now a regional park, was a working film studio and movie ranch from 1937 to 1965. *Chapter 2* describes the range of resources related to this theme.

Recreation

In 1986, the NPS completed a theme study to evaluate sites that represent the most outstanding examples of properties associated with the history of recreation in America. Two sites in or near the study area, the Rose Bowl Stadium and the Santa Monica Looff Hippodrome, were identified as outstanding examples with national significance in the theme study which also analyzed sites such as amusement parks, ballparks, yacht clubs, resorts, racetracks, zoos and aquariums. Both of

The National Park Service uses a series of natural and cultural themes to categorize the important resources protected by national park units. The themes are used to evaluate whether resources in a study area would broaden and diversify resources protected by the national park system.

these sites are national historic landmarks, and are described in detail in *Chapter 2: Resource Description*. Griffith Park, one of the largest urban parks in the United States, has been determined eligible for listing in the National Register of Historic Places (Gonzalez and Anderson 2013).

Criterion 1 Conclusion

The Rim of the Valley Corridor provides outstanding examples of geologic resources, paleontological resources, native plant communities, wildlife, and free flowing rivers and streams. Nationally significant cultural resources include national historic landmarks and national historic trails related to the first European contact with Native Americans, historic settlement and migration, transportation, communication, and engineering, space exploration, astronomical research, oil production, recreation, and architecture. Other resources may also have national significance but warrant more study. These include the Arroyo Seco Parkway, water conveyance and storage infrastructure, and Santa Susana Field Laboratory structures. The Rim of the Valley Corridor study area meets criterion 1.

Criterion 2: Possesses Exceptional Value or Quality in Illustrating or Interpreting the Natural or Cultural Themes of our Nation's Heritage

Every unit of the national park system preserves important aspects of our nation's natural and/or cultural heritage. The National Park Service uses a series of natural and cultural themes to categorize the important resources protected by national park units. The themes are used to evaluate whether resources in a study area would broaden and diversify resources protected by the national park system.

Natural Resource Themes

For natural resources, the publication *Natural History in the National Park System and on the National Registry of Natural Landmarks* (NPS 1990) describes national regions and a series of natural history themes.

The geologic resources associated with the Transverse Ranges Province, diverse paleontological resources, and examples of biodiversity are exemplary. These resources represent the following NPS natural themes.

Landforms of the Present

The "Landforms of the Present" theme describes the character of the landscape as a physical and scenic entity as it exists today, as well as present and past geologic events and processes. Principal features of the natural landscape such as mountain systems, river systems and lakes are included in this theme. Each landform possesses certain distinguishing qualities and characteristics which set it apart from others. The following subtheme related to Landforms of the Present is represented in the study area:

- **Mountain Systems (Geology/Transverse Ranges)**. The Santa Monica Mountains, Simi Hills, Conejo Mountain Volcanic complex, Santa Susana Mountains, San Gabriel Mountains and the Verdugo Mountains possess exceptional value in illustrating and interpreting mountain building, and plate tectonics. Specifically, these mountain ranges illustrate the geologic story of the Transverse Ranges Province. Over the past hundred and sixty million years, the rock formations and mountain ranges in the Western Transverse Ranges have been formed by the forces of weathering, erosion, sedimentation, compaction and pressure as well as seismic activity (earthquakes, uplift) and volcanism creating spectacular scenery, geologic formations, and topography.

Geologic History (Paleontological Resources)

The theme "Geologic History" represents the geologic history of the earth as found in rocks. These records of geologic history may be read from the composition, structure and relationships of rocks and fossils they contain.

Collectively, the Santa Monica Mountains, Simi Hills, Conejo Volcanic complex, the Santa Susana Mountains, and the westernmost San Gabriel Mountains contain rock formations with fossils from the Jurassic Period through the Holocene Epoch. The following subthemes related to "Geologic History" are represented in the study area:

- **Triassic – Cretaceous Periods**: The Santa Monica Slate and Tuna Canyon formations in the Santa Monica Moun-

tains, and the Chatsworth formation in the Simi Hills and Santa Susana Mountains, contain a range of fossil species from these geologic periods. A number of new species are described from the Tuna Canyon formation.

- **Paleocene – Eocene Epochs**: Four geologic formations, including the Santa Susana (Coal Canyon), Simi Conglomerate, Las Virgenes Sandstone, and Llajas formations represent geologic history of these epochs. These formations are found in SMMNRA, as well as the Simi Hills and Santa Susana Mountains. Many new species were described from the Santa Susana (Coal Canyon) and Llajas formations.
- **Oligocene – Recent Epochs**: The majority of fossiliferous formations in the study area represent these geologic epochs, which represent the mid-upper Cenozoic Era. Fossiliferous formations from these epochs are found in SMMNRA, the Simi Hills, the Santa Susana Mountains, the Conejo Mountain area, and the San Gabriel Mountains.

Land Ecosystems

The theme "Land Ecosystems" represents vegetation types as well as the animal populations and physical environmental features which are often important elements in identifying and evaluating sites. Land ecosystem themes represented by plant communities in the Rim of the Valley Corridor study area provide a unique opportunity to interpret the rich mosaic of native southern California habitats. Within a relatively short distance, visitors can experience excellent examples of coastal, riparian, montane, desert and subalpine habitats.

The following subthemes related to Land Ecosystems, as defined in the publication "Natural History in the National Park System," (NPS 1990) are represented in the study area. It should be noted that the themes are defined more broadly then current vegetation classification systems that are referenced in biological resources description in Chapter 2:

- **Grassland**: Less than one percent of California's native grassland is still intact today. Outstanding examples of native grassland within the study area include Laskey Mesa in the Simi Hills, a 200-acre plateau that contains on the best remaining examples in southern California. Smaller areas of native grassland are found in several sites within SMMNRA (Point Mugu State Park, Deer Creek, Yellow Hill, Cheeseboro Canyon) and on Oat Mountain where it is associated with extensive oak savanna.
- **Chaparral (shrubs and woodland including evergreen forest trees such as oak and tanbark)**:
  - *Shrub-dominated*: Outstanding examples of coastal sage scrub and chaparral are found throughout the mountains and hills of the study area. These habitats harbor numerous rare, threatened, and endangered species as well as endemic species not found anywhere else.
  - *Woodland*: Outstanding examples of coast live oak woodland, valley oak woodland, montane hardwood forest, riparian forest are located in SMMNRA, the Simi Hills and Santa Susana Mountains, the Verdugo Mountains, and the San Gabriel Mountains. The Santa Susan Mountains contain a particularly high diversity of oak woodlands including valley oak, canyon live oak, interior live oak, and coast live oak.
  - *Dry Coniferous Forest*: The San Gabriel Mountains and foothills, Upper Santa Clara River, and Santa Susana Mountain contain outstanding examples of montane-hardwood conifer, juniper woodland, pinyon-juniper woodland, and Sierran mixed conifer woodlands.

Aquatic Ecosystems Themes

The theme "Aquatic Ecosystems" is based on geomorphic and other physical aspects of aquatic ecosystems. The subtheme "Streams" represents aquatic ecosystems with flowing waters. The following subtheme related to Aquatic Ecosystems is represented in the study area:

- **Streams**: Some of the best remaining examples of alluvial fan sage scrub are

located in the foothill canyons of Santa Susana Mountains and San Gabriel Mountain as well as the Santa Clara River, providing an exceptional opportunity to preserve and interpret rare remnants of southern California natural heritage. River and stream systems in the Santa Monica Mountains, Santa Susana Mountains, Verdugo Mountains, San Gabriel Mountains and the Santa Clara River valley contain high quality riparian habitat which support numerous rare, threatened, and endangered species.

Cultural Themes

In evaluating the significance and suitability of cultural resources within or outside the national park system, the NPS uses the publication *NPS Thematic Framework (Cultural Resources)* for history and prehistory (*Appendix F*). The framework is an outline of major themes and concepts that help to conceptualize American history. It is used to assist in the identification of cultural resources that embody America's past and to describe and analyze the multiple layers of history encapsulated within each resource. Through eight concepts that encompass the multi-faceted and interrelated nature of human experience, the thematic framework reflects an interdisciplinary, less compartmentalized approach to American history.

As documented in *Chapter 2*, the study area contains a wide range of cultural resources representing all of the themes identified in the cultural thematic framework. The following section identifies those themes represented by resources of national or potential national significance as described under Criterion 1.

Peopling Places

The theme "Peopling Places" examines human population movement and change through prehistoric and historic times. It also looks at family formation; at different concepts of gender, family, and sexual division of labor; and at how they have been expressed in the American past. The "Peopling Places" theme includes such topics as family and the life cycle; health, nutrition, and disease; migration from outside and within; community and neighborhood; ethnic homelands; encounters, conflicts, and colonization. Distinctive and important regional patterns join together to create microcosms of America's history and to form the "national experience." Topics under this theme represented by nationally significant resources within the study area include:

- **Ethnic Homelands**: Thousands of archeological sites found within the study area depict more than 10,000 years of human occupation.
- **Migration from Outside and Within**: The Juan Bautista de Anza National Historic Trail and Route 66 are significant for the role they played in the settlement of the Los Angeles region and the western United States.
- **Encounters, Conflicts, and Colonization**: Juan Bautista de Anza National Historic Trail played a significant role in Spanish colonization of Alta California and the resultant displacement of indigenous cultures and societies that resulted from colonization efforts.

Expressing Cultural Values

This theme covers expressions of culture—people's beliefs about themselves and the world they inhabit. This theme also encompasses the ways that people communicate their moral and aesthetic values. Topics that help define this theme relevant to the study area include:

- **Visual and Performing Arts**: Paramount Ranch and other sites related to the film industry throughout the study area convey the significance of film-making in southern California. The film industry, along with oil, helped to propel the economic development and growth of Los Angeles. The significance of the motion picture industry in the 20th century stretches beyond the borders of the United States and affects contemporary culture worldwide.
- **Architecture, landscape architecture, and urban design**: In the field of architecture, the nearby Eames House and the Gamble House national historic landmarks have both been designated national historic landmarks and both reflect nationally significant examples of architecture born out of the region's landscape and mild climate. Many other

structures within the study area collectively reflect significant examples of architecture.

- **Popular and Traditional Culture**: Recreation and Culture, Sports Facilities: The Rose Bowl National Historic Landmark has outstanding significance in the field of recreation. The Rose Bowl's renown, while primarily linked to college football, has been enhanced by its use for World Olympics and other national and international sporting events.

Developing the American Economy

This theme reflects the ways Americans have worked and materially sustained themselves by the processes of extraction, agriculture, production, distribution, and consumption of goods and services. In examining the diverse working experiences of the American people, this theme encompasses the activities of farmers, entrepreneurs, and managers, as well as the technology around them.

Topics under this theme represented by nationally significant resources within the study area include:

- **Extraction and Production**: Well No. 4, Pico Canyon Oil Field National Historic Landmark was the first major producer of southern California oil. Oil had the greatest impact on the regional economy and shifted the population and political power within California from north to south.
- **Transportation and Communication**
  - *Juan Bautista de Anza National Historic Trail*. The colonists of the Anza expedition helped broaden the agricultural base of Alta California and introduced some skilled trades.
  - *The Old Spanish Trail National Historic Trail* had wide-ranging effects on the economy of the Mexican southwest. The route was later used for the alignment of Route 66, which facilitated western migration to the region in the 20th century.
  - *The Butterfield Overland Stage Route* was authorized by Congress in 1857 to improve communication between the eastern United States and California, which became a more significant component of the U.S. economy following the gold rush.

Expanding Science and Technology

This theme focuses on science, which is modern civilization's way of organizing and conceptualizing knowledge about the world and the universe beyond. Technology is the application of human ingenuity to modification of the environment in both modern and traditional cultures. Topics under this theme that are represented by nationally significant resources within the study area include: 1) experimentation and invention, 2) technological applications, 3) scientific thought and theory:

- **Experimentation and Invention**:
  - *Jet Propulsion Laboratory* experimentation and invention has played a significant role in scientific innovation in the areas of astrophysics, rocket science, and deep space exploration.
  - *Mount Wilson Observatory*: Astronomy questions, including the nature of sunspots, the temperature and composition of stars, and the structure and origin of the universe were addressed by some of the greatest astronomers in the world using the telescopes and other equipment at the Mount Wilson Observatory.
- **Technological Applications:**
  - Technological innovations at the *Jet Propulsion Laboratory* include the creation of a communications network through which NASA controls its unmanned space craft and development of a high quality space simulation facility for testing spacecraft under the extreme conditions of deep space. Both of these played a crucial role in the development of NASA's interplanetary and deep space probes.
- **Scientific Thought and Theory**:
  - The *Jet Propulsion Laboratory* NHLs associated with the exploration of deep space have contributed directly to the advancement of scientific knowledge within the fields of astronomy and astrophysics.

- Research efforts at the *Mount Wilson Observatory* have shaped current scientific thought and theory in astronomy.

Themes Related to Resources of Potential National Significance

Shaping the Political Landscape
Topics under this theme represented by resources of potential national significance within the study area include:

- **Military Institutions and Activities**: *The Cold War* is the subject of a Congressionally mandated national historic landmark theme study (Senate Bill 2561). Among the resources which Congress recommended for consideration in this theme study were Intercontinental Ballistic Missiles and manufacturing sites. These categories include several sites located within the study area such as the Jet Propulsion Laboratory at Pasadena, and the Santa Susana Field Laboratory in the Simi Hills. Cold War guided missile technology was researched, developed, and tested at all of these sites.

Developing the American Economy
Topics under this theme that are represented by resources of potential national significance within the study area include:

- **Transportation and Communication**: The *Arroyo Seco Parkway* is potentially nationally significant for its advancement of transportation engineering, particularly the modern freeway.

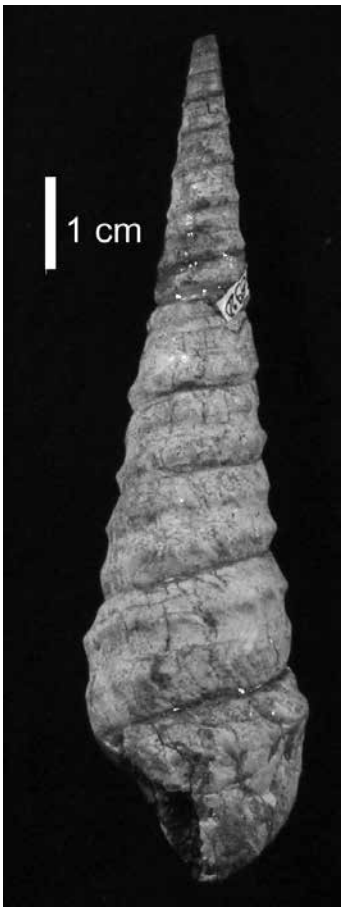
Expanding Science and Technology
Topics under this theme that are represented by resources of potential national significance within the study area include:

- **Experimentation and Invention**: The *Santa Susana Field Laboratory* is significant for the development and testing of rocket engines from the start of the Cold War in 1948. The site was used for research and testing throughout the entire Cold War era.
- **Technological Applications**: The *Santa Susana Field Laboratory* contributed technological innovation related to rocket engines that supported missile development during the Cold War and initial deep space exploration. The Santa Susana Field Laboratory also contributed to the development of atomic energy through research programs developed in response to the Atoms for Peace initiative of 1953. This research led to the design of the first nuclear reactor designed specifically for civilian purposes.

Transforming the Environment
This theme examines the variable and changing relationships between people and their environment, which continuously interact. The environment is where people live, the place that supports and sustains life. The American environment today is largely a human artifact, so thoroughly has human occupation affected all its features. This theme acknowledges that the use and development of the physical setting is rooted in evolving perceptions and attitudes. Topics under this theme represented by resources of potential national significance include:

- **Manipulating the environment and its resources**: The isolated Los Angeles region required significant engineering feats to grow from an isolated pueblo to the second largest metropolitan area in the United States. The importation of water and elaborate flood protection systems that provide for growth are among the most elaborate in the United States.
- **Protecting and preserving the environment**: Despite dramatic alternatives to natural systems and native habitat, southern California is one the most biological diverse areas in the United States. Recently, numerous local and national initiatives have combined efforts the revitalize and restore the Los Angeles River, while simultaneously exploring ways to restore habitat while continuing to protect urban areas from periodic flooding.

Criterion 2 Conclusion
The Rim of the Valley Corridor study area possesses exceptional quality in illustrating or interpreting a wide range of natural and cultural history themes of the nation's heritage.



The study area includes some of the most productive and diverse fossil sites in the United States in terms of the quality, quantity, diversity of species found, and geologic eras represented, providing significant opportunities for scientific study. A 50 million year old Turritella fossil from the study area is shown. Photo: NPS.

Criterion 3: It Offers Superlative Opportunities for Public Enjoyment, or for Scientific Study

Scientific Study

Mountain Building and Geology

Scientific study of geological features in the study area continues to provide major contributions to our understanding of plate tectonics and the rotation of the Transverse Ranges Province. Paleo-magnetic studies in particular contribute to understanding of how the earth formed. Scientific studies in the San Gabriel Mountains continue to provide contributions to our understanding of plate tectonics along the San Andreas Fault.

Paleontological Resources

New fossil species are still being discovered and are furthering the study of paleoecology. The fossil record found within the study area includes specimens of terrestrial and marine flora and fauna from an incredible range of ecological zones and epochs from the Jurassic Period to the Holocene Epoch. The sedimentary rock layers deposited during the Cenozoic and now exposed in the northern half of the study area are estimated to be 35,000 feet thick, possibly the thickest Cenozoic deposits in North America and one of the thickest most complete records of the Cenozoic Era on earth. Study of the Miocene volcanic rocks (also known as the Conejo Volcanic complex) is providing valuable evidence of the great Miocene rotation and unearthing flora fossil specimens that provide a glimpse of the Miocene environment. Vertebrate fossils from the Sespe formation are shedding light on the exciting species that lived in North America at the height of the Age of Mammals. Excellent opportunities for scientific research of geologic processes and evolution, as well as paleoecology are available.

Some of these scientifically important fossil resources are being lost, rapidly deteriorating and decomposing when exposed on the surface and others are being lost to unauthorized collecting. Other fossil resources within the study area may be on land vulnerable to future development. Such development sometimes opens up short term opportunities for scientific discoveries of fossils such as the ongoing mitigation work at the Simi Valley landfill (Lander 2011). Once the development is underway, the fossils are removed from the site and added to collections such as those at the Natural History Museum of Los Angeles County where they can be accessed by future researchers. The sites themselves, however, are permanently altered and their value to future scientists may be compromised, depending on the extent of the mitigation.

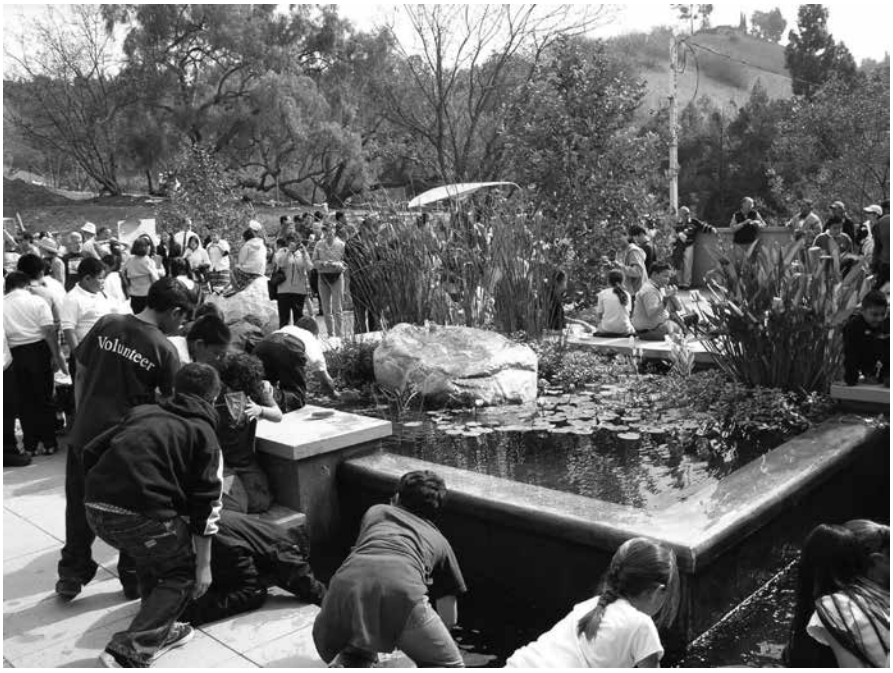
Biodiversity

The potential for scientific discovery related to biodiversity is high in the study area. In addition to the wide range of sensitive species, are additional species considered rare enough to be eligible for formal designation as rare, threatened or endangered. Many more species have not yet been described or named, particularly plants and invertebrates. For example, although much is known about the biological resources of the Santa Susana Mountains, there are still new, previously undescribed species being discovered here, particularly invertebrates (pers. comm. David Magney 2011).

The study area also includes the northernmost or southernmost ranges for several plant species. For example, the Verdugo Mountains are the northernmost location for mission manzanita (*Xylococcus bicolor*), a shrub found in chaparral that can be found from the study area, south through San Diego County and



This panoramic view, west from the Verdugo Mountains (foreground) to Griffith Park (end of mountains near center of photo), illustrates the relationship between the eastern Santa Monica Mountains and the Verdugo Mountains and how they function as ecological stepping stones. Note the Glendale Narrows reach of the Los Angeles River flows between the two mountain ranges. Photo: NPS.



Nature centers throughout the study area, such as Audubon Center at Debs Park, located in a densely populated area of Los Angeles in the Arroyo Seco corridor, provide excellent opportunities for both recreation and connecting people to signficant natural and cultural resources. Photo: NPS.

into Baja, Mexico. Because the Verdugo population is disjunct from the southern California population, this could indicate that the species has been more wide ranging in the past. Plant occurrences at the edges of their ranges are generally thought of as being important because they may be genetically critically different from the occurrences at the center of the species' range. The small genetic difference may be an evolutionary advantage that allows species to better cope with changing conditions. The confluence of several species' range edges provides a unique opportunity for study of plant evolution and potential response to climate change.

Although the study area is located within and adjacent to a large metropolitan area, not all portions of the study area have been assessed for biological resources. Studies that have taken place and yielded insights into the study area's high biodiversity and to previously undiscovered species, have largely been conducted in response to threats to undeveloped or relatively undisturbed areas. Given this pattern, it is likely that areas still undeveloped, or relatively undisturbed, could provide outstanding opportunities for scientific research, particularly given the large number of universities, colleges and other institutions in the region.

Locations such as Griffith Park and the Verdugo Mountains provide opportunities for important scientific study of genetic interchange between otherwise isolated populations such as the Santa Monica and San Gabriel Mountains. Because of their geographic location, Griffith Park and the Verdugo Mountains serve as potential stepping stones for gene flow and species movement between these larger areas (LADRP 2012a).

The dynamics between areas of exceptionally high biodiversity and human settlement and development, including highly urbanized areas, provide unique opportunities for scientific research related to the urban wildland interface, the effects of anthropogenic disturbance, and ecological enhancement and restoration.

Cultural Resources

The richness and concentration of archeological sites in the study area provides opportunities for scientific study of native culture's adaptation to the environment and their interactions with other coastal and interior groups. The study area can also be used to highlight exceptional opportunities for education and interpretation about cultural themes such as "Peopling Places", "Expressing Cultural Values", "Expanding Science and Technology", and "Developing the American Economy".

Opportunities for Public Enjoyment

More than 18 million people live in close proximity to the Rim of the Valley Corridor. Public open spaces and trails within the study area provide superlative opportunities for a wide range of recreational activities including hiking, biking, horseback riding, environmental education, and birding.

The study area is an excellent location for Angelenos to learn how the growth of Los Angeles has affected the environment. Opportunities for volunteerism and citizen science abound with the wealth of biodiversity in the study area. Several nature centers serve the study area on a limited basis. In addition, many of the geologic features of the Transverse Ranges Province are accessible to both scientists and visitors. Due to the proximity of the Transverse Ranges to the millions of people who live in and visit southern California, the interpretive value of this unique "tectonic story with a twist," would be of great interest.

Scenic vistas offer opportunities for wayside exhibits and ranger programs.

The Rim of the Valley Corridor study area includes interpretive opportunities and properties of differing levels of significance that represent successive periods of human history and culture, including pre-European, Spanish colonial, Mexican, and successive eras of economic and cultural development under the American period. Hundreds of sites listed in the National Register of Historic Places and numerous state and local historic parks and sites provide opportunities to further illustrate these themes. Many of these sites are located within existing parks or protected areas.

Criterion 3 Conclusion

The Rim of the Valley Corridor offers superlative opportunities for public enjoyment and scientific study. The Santa Monica Mountains and the San Gabriel Mountains have a long history of research in geology, paleontology, Mediterranean ecosystems, and archeology. Public access to specific rock formations such as those used for paleomagnetic testing could provide future geologists with scientific opportunities, and interpreters with opportunities to explain this unique geology to the public. Comparatively few studies have been published regarding the natural and cultural resources of the Simi Hills, Santa Susana Mountains, and the Verdugo Mountains, therefore creating high potential for scientific discovery.

Criterion 4: It Retains a High Degree of Integrity as a True, Accurate, and Relatively Unspoiled Example of a Resource

Despite extensive urbanization and development in the region, the study area contains nationally significant resources with a relatively high degree of integrity. Approximately 84% of the study area lands are protected recreation areas, conserved open spaces, or vacant undeveloped lands. Isolated pockets of significant resources also exist in portions of the study area where extensive urbanization has fragmented natural habitat.

The study area features large areas of open space that contain relatively undisturbed habitat occurring in varying sizes, configurations, environments, and levels of integrity. Because of the high degree of biodiversity and range of biological communities in the study area, even smaller, fragmented habitat areas can be significant as ecological stepping stones and as habitat for sensitive species, particularly more mobile species such as birds. At the regional scale, this network of habitat areas comprised of larger and smaller areas contributes to the ecosystem health and biodiversity of the region. Given the study area's significant land use changes over time, agricultural uses (both ranching and irrigated agriculture) and later urbanization, the study area retains remarkably high biodiversity.

Numerous open spaces, historical parks and sites have preserved cultural resources within the study area, many of which have high levels of integrity as depicted by the number of national historic landmarks and sites listed in the National Register of Historic Places. There are many open spaces and undeveloped lands in the Simi Hills, Santa Susana Mountains, and Conejo Mountain area that have not been surveyed and have high potential for finding archeological resources.

San Gabriel Mountains

Early conservation of the San Gabriel Mountains in 1891 has largely preserved its natural, cultural, and scenic integrity. Although some areas have been altered for flood control and recreational facilities, as a whole, the native plant communities and river systems remain intact and provide a refuge for plants and wildlife. Areas with significant resources retain a high degree of integrity and are acknowledged as relatively unspoiled examples of their type.

Santa Monica Mountains

The Santa Monica Mountains and parts of the Simi Hills have been protected by a consortium of national, state and local agencies under the umbrella of Santa Monica Mountains National Recreation Area since 1978. The sites with significant resources retain a high degree of integrity and are relatively unspoiled examples of their type of resource.

Conejo Mountain Area, Simi Hills, and Santa Susana Mountains

There are numerous open space and park lands within these areas that retain a high degree of integrity and are relatively unspoiled

The study finds that the Rim of the Valley Corridor contains resources of national significance, many of which have been recognized through previous studies or designations.

examples of natural and cultural resources. Examples of such locations include Rocky Peak, Pico Canyon, Towsley Canyon, Santa Clarita Woodlands, Santa Susana Pass State Historic Park, Burro Flats, Upper Las Virgenes Open Space Preserve, open space and parklands in Thousand Oaks, and Wildwood Park.

Los Angeles River and Arroyo Seco

The urban fabric of the Los Angeles River and Arroyo Seco corridors contain well-preserved and significant cultural resources related to the settlement of the region and architectural and urban design. This includes four national historic landmarks (Gamble House, Rose Bowl and the two Jet Propulsion Laboratory sites). Numerous historic districts along the Arroyo Seco corridor preserve entire neighborhoods that are excellent examples of the Arts and Crafts movement in the region. The Gamble House National Historic Landmark is the most significant example of this style of architecture and retains a high degree of integrity.

Upper Santa Clara River

Most of the region's rivers have been altered for flood protection or water resource development resulting in the loss of approximately 96% of historic riparian communities. However, the Santa Clara River has remained largely natural and as such, retains a relatively high level of integrity.

Wildlife Corridors and Ecological Connectivity

Despite the high levels of urban development in the region, the high biodiversity of the study area has largely been retained due to the integrity of ecological corridors that allow species movement and interchange. One of the most significant wildlife corridors for the Santa Monica Mountains is the Santa Monica – Sierra Madre wildlife corridor. This wildlife corridor connection is one of the few coastal to inland connections remaining in the South Coast Ecoregion, stretching from the rugged Santa Monica Mountains at the coast to the gently sloping Simi Hills, and on to the jagged peaks of the Santa Susana Mountains, and the Sierra Madre Ranges of Los Padres National Forest. A rich mosaic of natural communities occur in this area, from coast live oak woodland, valley oak savanna, and walnut woodlands, to chaparral, coastal sage scrub, grasslands, and diverse riparian forests and woodlands. The Santa Monica Mountains as a physically isolated geographic area is insufficient to provide long-term persistence of mountain lions dependent on larger scale habitat ranges without this connectivity. Ecological connectivity studies have identified linkages that represent a range of species and the key habitats needed to support them long-term. Overall, the ecological integrity of the Santa Monica Mountains and other habitat rich portions of the study area are dependent on long-term physical connectivity (Riley et al. 2014). Another important regional wildlife corridor is the link between the San Gabriel Mountains to the Sierra Pelona (Spencer et al. 2010).

Criterion 4 Conclusion

Nationally significant resource areas within the study area retain a high degree of integrity and contain relatively unspoiled examples of significant resources, despite extensive land use changes over time associated with agriculture and urbanization.

Overall Conclusions – National Significance

The study finds that the Rim of the Valley Corridor contains resources of national significance, many of which have been recognized through previous studies or designations. This includes national park or trail system designations, NPS special resource study evaluation, and national historic landmark designations.

Nationally significant natural resources include outstanding examples of geologic history including the evolution of the Transverse Ranges Province and a diversity of well-preserved marine and terrestrial paleontological resources. The study area contains a high level of biodiversity including outstanding examples of native grasslands, coastal sage scrub, chaparral, dry coniferous forests, and alluvial fan sage scrub. Nationally significant cultural resources represent a wide range of themes related to human use and settlement in the region. The high concentrations of archeological resources provide insight into more than 10,000 years of Native American history. Outstanding examples of cultural resources also include national historic landmarks representing topics such as architecture, recreation, space exploration, and oil extraction, as well as national historic trails that mark important

To be considered suitable for addition to the national park system, an area must represent a natural or cultural resource type that is not already adequately represented in the national park system, or is not comparably represented and protected for public enjoyment by other federal agencies; tribal, state, or local governments; or the private sector.

national events related to migration and commerce. Additionally, the study area features cultural resources identified as significant through national historic landmark theme studies in areas such as astronomy and astrophysics.

The landscapes and resources of the study area offer superlative opportunities for public enjoyment and scientific study. More than 18 million people live within a two hour drive of the study area. Existing public open spaces, recreation areas, and trails provide superlative opportunities for hiking, biking, equestrian activities, outdoor education, and birding. The varied topographic features provide highly scenic landscapes including seashore, mountain views, and verdant canyons. Cultural resources depict a wide range of historical themes and provide opportunities to interpret the region's rich cultural heritage.

The dynamics between areas of exceptionally high biodiversity and long history of human settlement provide unique opportunities for scientific research and study. The Santa Monica Mountains and the San Gabriel Mountains have a long history of research in geology, Mediterranean ecosystems, and astronomy. Comparatively fewer studies have been published on the natural and cultural resources of the Simi Hills, Santa Susana Mountains, and Verdugo Mountains, which have high potential for scientific study.

The study area retains a high degree of integrity and contains relatively unspoiled examples of significant resources, despite impacts in some areas from agriculture, urban development, and associated infrastructure. Approximately 84% of the study area lands are protected recreation areas, conserved open spaces, or vacant undeveloped lands. Isolated pockets of both nationally significant natural and cultural resources are also present in the more urbanized portions of the study area.

Suitability

To be considered suitable for addition to the national park system, an area must represent a natural or cultural resource type that is not already adequately represented in the national park system, or is not comparably represented and protected for public enjoyment by other federal agencies; tribal, state, or local governments; or the private sector.

Adequacy of representation is determined on a case-by-case basis by comparing the potential addition to other comparably managed areas representing the same resource type, while considering differences or similarities in the character, quality, quantity, or combination of resource values. The comparative analysis also addresses rarity of the resources, interpretive and educational potential, and similar resources already protected in the national park system or in other public or private ownership. The comparison results in a determination of whether the proposed new area would expand, enhance, or duplicate resource protection or visitor use opportunities found in other comparably managed areas.

For the purposes of this analysis, only those resources determined nationally significant are evaluated for suitability. Nationally significant resources within Santa Monica Mountains National Recreation Area (SMMNRA) are already represented in the national park system and are not analyzed for suitability. The San Gabriel Mountains, foothills, and Upper Santa Clara River areas within the study area were recently evaluated in the *San Gabriel Watershed and Mountains Special Resource Study* (*San Gabriel Study)* and found to be suitable for addition to the national park system (NPS 2013f). Therefore, the other portions of the study area are the focus of this suitability analysis.

NPS Thematic Framework – Natural and Cultural Themes

Every unit of the national park system preserves important aspects of our nation's natural and/or cultural heritage. The National Park Service (NPS) uses a series of natural history and cultural themes to categorize the important resources protected by national park units. The themes are used to evaluate whether resources in a study area would broaden and diversify resources protected by the national park system. Nationally significant cultural and natural resources in the study area are organized by these themes as described in the previous section, "National Significance".

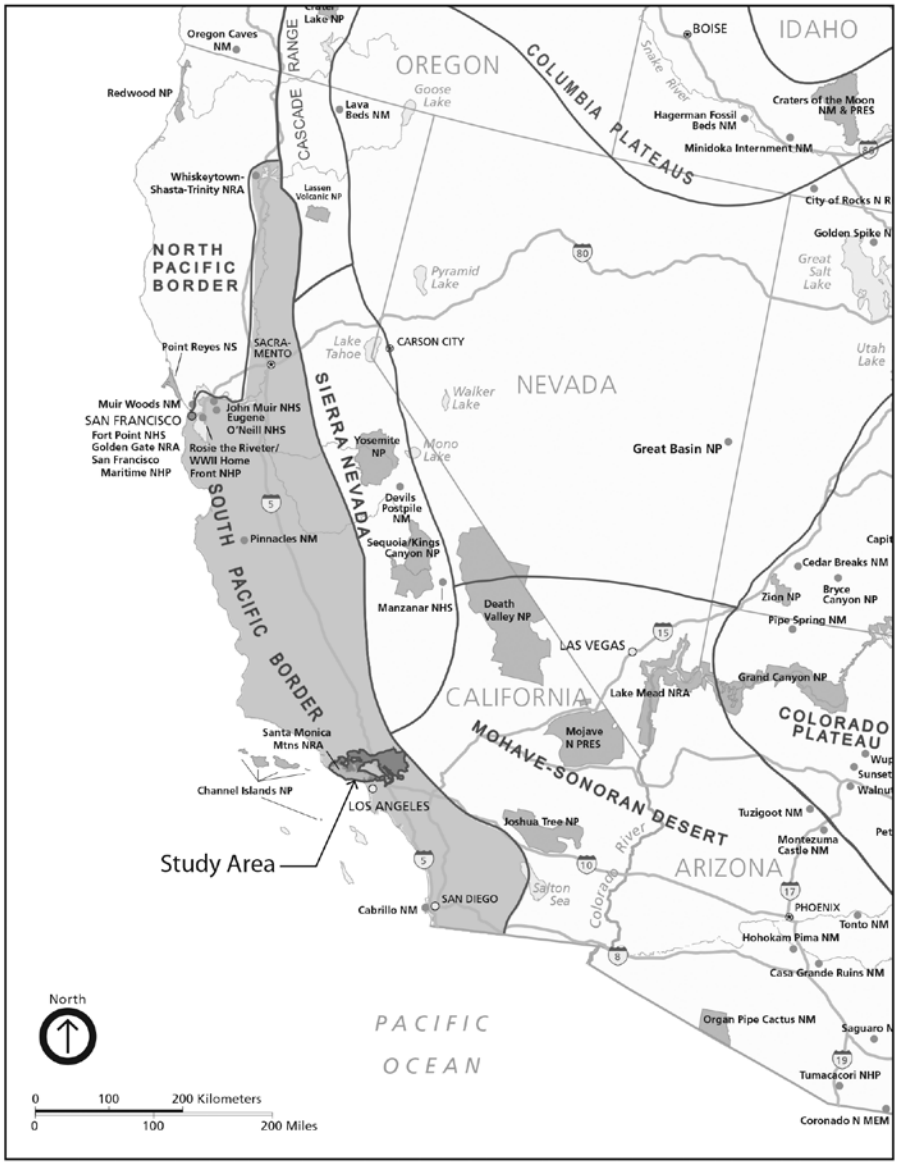


Figure 3-2: South Pacific Border Region

For natural resources, the publication, *Natural History in the National Park System and on the National Registry of Natural Landmarks* (NPS 1990) describes national regions and a series of natural history themes. The study area lies within the South Pacific Border region, which includes coastal California from the San Francisco Bay area to the Mexico border, and the San Joaquin Valley (*Figure 3-2: Southern Pacific Border Region*). The South Pacific Border region provides the context for determining whether nationally significant natural resources within the study area are adequately represented in the national park system or other comparably managed areas.

For cultural resources, the cultural resources thematic framework describes overarching themes and subthemes (*Appendix F: NPS Thematic Framework (Cultural Resources)*).

Evaluation of Themes Represented in the Rim of the Valley Corridor Study Area

The following analysis is organized by natural and cultural history themes represented in the study area. Many of the natural and cultural resource themes represented in the study area are already represented in the area's existing national park and trail system designations including SMMNRA, the Juan Bautista de Anza National Historic Trail, and the Old Spanish National Historic Trail. The Route 66 Corridor Program is another NPS designated program that seeks to protect the nationally significant resources associated with the Route 66 Corridor.

Some natural and cultural themes represented by nationally significant resources in the study area are not currently represented in the national park and trail system. This analysis evaluates whether these resources would expand, enhance or duplicate resource protection or visitor use opportunities in other national park units or comparably managed areas.

Table 3-2: Natural and Cultural Resource Themes Represented in the Rim of the Valley Corridor Study Area outlines the themes represented in existing national park and trail designations within the study area and then identifies which of those themes are represented by nationally significant resources in the remaining portions of the study area. Those study area resources previously determined suitable in the San Gabriel Watershed and Mountains Special Resource Study are also outlined in *Table 3-2*.

Natural Resource Themes

Landforms of the Present: Mountain Systems

The "Landforms of the Present" theme describes the character of the landscape as a physical and scenic entity as it exists today, as well as present and past geologic events and processes. Principal features of the natural landscape such as mountain systems, river systems and lakes are included in this theme. Each landform possesses certain distinguishing qualities and characteristics which set it apart from others. The following subthemes related to "Landforms of the Present" are represented in the study area:

Table 3-2: Natural and Cultural Resource Themes Represented in the Rim of the Valley Corridor Study Area

Theme	Represented in Existing National Recreation Area and/or National Trails	Represented in San Gabriel Study portion of Rim of the Valley Corridor (Western San Gabriel Mountains and Foothills, Upper Santa Clara River)	Represented in Study Area (outside of SMMNRA and San Gabriel Study Area and excluding National Trails)
Landforms of the Present			
Cuestas and Hogbacks	Yes - SMMNRA	No	No
Mountain Systems	Yes - SMMNRA	Yes - the San Gabriel Mountains contain diverse geologic features and provide an excellent example of mountain building as a result of plate tectonics.	Yes - the Conejo Mountains, Simi Hills, Santa Susana Mountains, and Verdugo Mountains-San Rafael Hills all contain geologic features that further depict mountain building as a result of plate tectonics.
Seashores, Lakeshores, and Islands	Yes - SMMNRA	No	No
Caves and Springs	Yes - SMMNRA	No	No
Geologic History			
Triassic-Cretaceous Periods	Yes - SMMNRA	No	Yes - Fossil bearing formations include: Chatsworth formation (Simi Hills, Santa Susana Mountains)
Paleocene – Eocene Epochs	Yes - SMMNRA	No	Yes - Fossil bearing formations include: Las Virgenes formation (Simi Hills, Santa Susana Mountains)
Oligocene-Recent Epochs	Yes - SMMNRA	No	Yes - Fossil bearing formations include: Conejo Volcanic complex (Simi Hills, Santa Susana Mountains, Conejo Mountain area); Towsley formation (Simi Hills, Santa Susana Mountains)
Land Ecosystems			
Grassland	Yes - SMMNRA	No	Yes - High quality perennial grasslands at Laskey Mesa and Oat Mountain (Simi Hills and Santa Susana Mountains)
Dry Coniferous Forest	No	Yes - Sierran mixed conifer forest, ponderosa pine forest, montane hardwood-conifer (San Gabriel Mountains) and juniper woodland (Upper Santa Clara River)	Yes -Sierran mixed conifer forest (Santa Susana Mountains)
Chaparral (shrubs and woodland including evergreen forest trees	Yes - SMMNRA	Yes – Mixed chaparral, chamise-redshank chaparral, montane such as oak and tanbark) chaparral, coastal sage scrub, coast live oak woodlands, montane hardwood forest, riparian forest (throughout area)	Yes – Mixed chaparral, chamise-redshank chaparral, coast live oak woodlands, riparian forest (throughout area), valley oak woodlands (Santa Susana Mountains)
Aquatic Ecosystems			
Marine Environmental	Yes - SMMNRA	No	No
Estuaries	Yes - SMMNRA	No	No
Streams	Yes - SMMNRA	Yes -High quality riparian habitat (throughout area) and alluvial fan sage scrub (Upper Santa Clara River, Tujunga Wash)	Yes - Riparian habitat (throughout area)
Peopling Places			
Ethnic Homelands	Yes - SMMNRA	No	Yes - Over 500 recorded archeological sites
Migration from Outside and Within	Yes - Juan Bautista de Anza National Historic Trial; Old Spanish National Historic Trail; Route 66	No	No

Table 3-2: Natural and Cultural Resource Themes Represented in the Rim of the Valley Corridor Study Area (continued)

Theme	Represented in Existing National Recreation Area and/or National Trails	Represented in San Gabriel Study portion of Rim of the Valley Corridor (Western San Gabriel Mountains and Foothills, Upper Santa Clara River)	Represented in Study Area (outside of SMMNRA and San Gabriel Study Area and excluding National Trails)
Peopling Places (continued)			
Encounters, Conflicts and Colonization	Yes - Juan Bautista de Anza National Historic Trail, SMMNRA (Saddle Rock Ranch Pictograph)	No	No
Expressing Cultural Values			
Architecture, landscape architecture urban design	No	No	Yes - Gamble House National Historic and Landmark, Eames House National Historic Landmark
Popular and Traditional Culture	No	No	Yes - Rose Bowl National Historic Landmark
Visual and Performing Arts	Yes – SMMNRA (Paramount Ranch)	No	No
Developing the American Economy			
Transportation and Communication	Yes - Juan Bautista de Anza National Historic Trial; Old Spanish National Historic Trail; Route 66	No	Yes. Butterfield Overland Trail
Extraction and Production	No	No	Yes - Well No.4, Pico Canyon Oil Field National Historic Landmark
Expanding Science and Technology			
Experimentation and Invention	No	Yes - Mt. Wilson Observatory (potentially NHL eligible)	Yes – Jet Propulsion Laboratory sites (Space Flight Operations Facility National Historic Landmark, Twenty-five Foot Simulator National Historic Landmark)
Technological Applications	No	No	Yes - Jet Propulsion Laboratory sites (Space Flight Operations Facility National Historic Landmark, Twenty-five Foot Simulator National Historic Landmark)
Scientific Thought and Theory	No	Yes - Mt. Wilson Observatory	Yes - Jet Propulsion Laboratory sites (Space Flight Operations Facility National Historic Landmark, Twenty-five Foot Simulator National Historic Landmark)

- Cuestas and Hogbacks
- Mountain Systems
- Seashores, Lakeshores, and Islands
- Caves and Springs

These four subthemes are represented in SMMNRA, and of these, the subtheme of Mountain Systems is represented elsewhere in the study area. The story of the Transverse Ranges Province is represented in SMMNRA as well as the adjacent portions of the range including the Conejo Mountain area, Simi Hills, Santa Susana Mountains, and Verdugo Mountains-San Rafael Hills. The research conducted on the Conejo Volcanic complex was instrumental in constructing the current model/theory of the Transverse Range rotation. Together, the Santa Monica Mountains and Conejo Volcanic complex best tell this unique geologic story while the Simi Hills, Santa Susana Mountains, and Verdugo Mountains-San Rafael Hills contribute.

In the *San Gabriel Study* (NPS 2013f), the San Gabriel Mountains were found to be a suitable addition to the national park system as a representation of the subtheme "Mountain Systems" (NPS 2013f). The study identified that the significance of the San Gabriel Mountains as a mountain system lies in the evidence of active mountain building and the diverse array of geological features, both of which are directly associated with the tectonic setting of

Of the national park units and comparably managed areas that represent the theme mountain systems, in no other area does the visitor have an opportunity to observe the forces of the San Andreas Fault System and how it relates to active mountain building.

the San Andreas Transform Fault System. Of the national park units and comparably managed areas that represent the theme mountain systems, in no other area does the visitor have an opportunity to observe the forces of the San Andreas Fault System and how it relates to active mountain building. In addition, the San Gabriel Mountains contain a diversity of geological features that represent some of the oldest rocks on the west coast of California. These units have helped geologists to understand how the Earth's crust has evolved in the region. The San Gabriel Mountains could expand greatly on the story of the San Andreas Fault and plate tectonics in the national park system.

Conclusion: Landforms of the Present – Mountain Systems

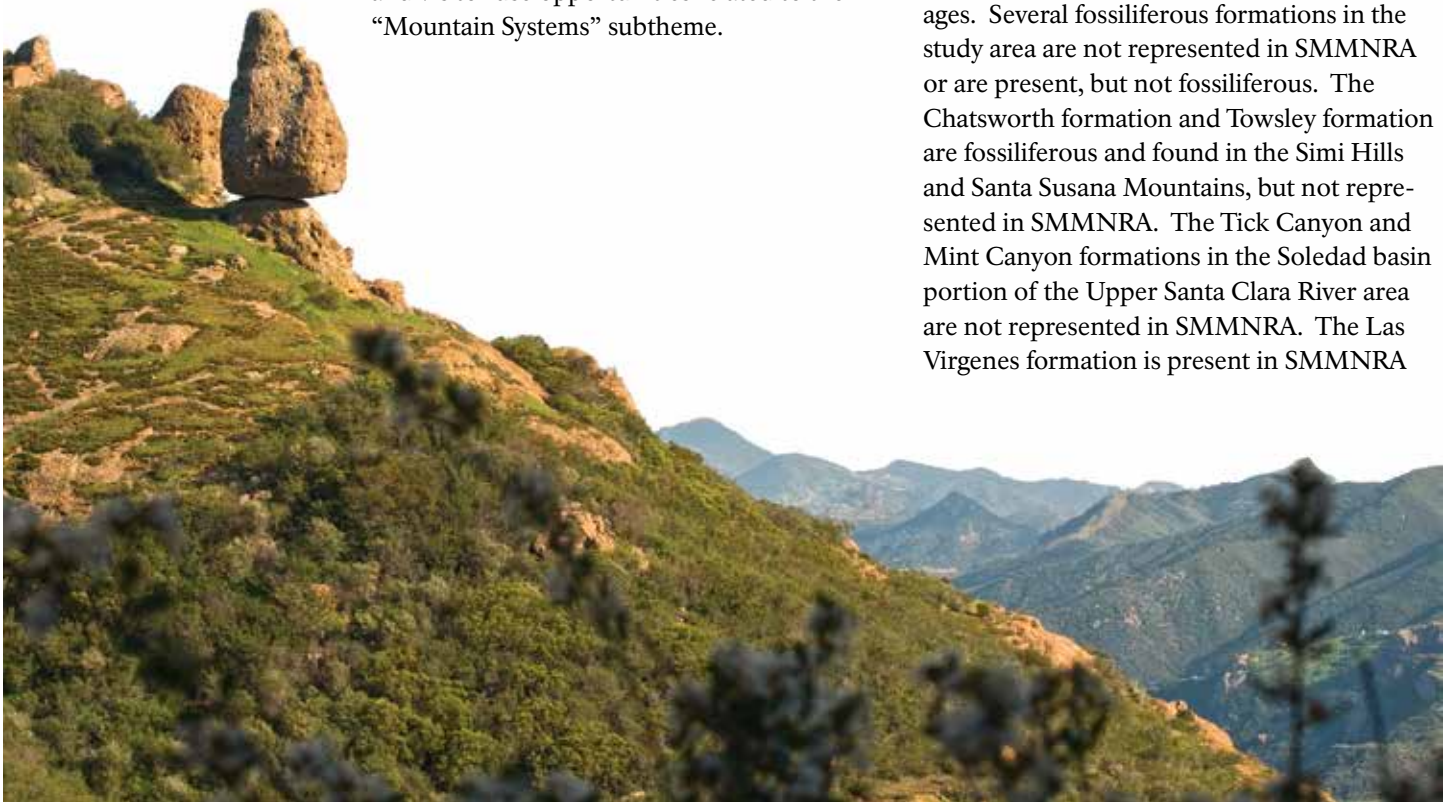
The subtheme "Mountain Systems" is represented by the Santa Monica Mountains within SMMNRA. Through the San Gabriel study process, the San Gabriel Mountains were found to be a suitable addition to the national park system, by expanding greatly on the story of the San Andreas Fault and plate tectonics in the national park system. The Conejo Volcanic complex, Simi Hills, Santa Susana Mountains, and Verdugo Mountains-San Rafael Hills expand and enhance resource protection and visitor use opportunities related to the "Mountain Systems" subtheme.

Geologic History: Paleontological Resources of the Triassic – Cretaceous Periods; Paleocene – Eocene Epochs; and Oligocene - Recent Epochs

The "Geologic History" theme describes the records of the geologic history of the earth as found in rocks. These records, which span a period of billions of years, may be read from the composition, structure, and relationships of rocks and the fossils they contain. The subthemes involve the location, identification, and evaluation of the more significant geologic records in terms of the value and usefulness in illustrating the history of the Earth and its life. The following subthemes related to "Geologic History" are represented in the study area:

- Triassic - Cretaceous Periods
- Paleocene - Eocene Epochs
- Oligocene - Recent Epochs

SMMNRA contains one of the most extensive and diverse assemblages of fossil material known in the national park system (Tweet 2012b). Although many of the rock formations in the Simi Hills and Santa Susana Mountains are the same as those in the Santa Monica Mountains, the fossil species represented there may be distinct due to the changing position of the coastline through the geologic ages. Several fossiliferous formations in the study area are not represented in SMMNRA or are present, but not fossiliferous. The Chatsworth formation and Towsley formation are fossiliferous and found in the Simi Hills and Santa Susana Mountains, but not represented in SMMNRA. The Tick Canyon and Mint Canyon formations in the Soledad basin portion of the Upper Santa Clara River area are not represented in SMMNRA. The Las Virgenes formation is present in SMMNRA



The story of the Transverse Ranges Province is represented in SMMNRA as well as the adjacent portions of the range including the Conejo Mountain area, Simi Hills, Santa Susana Mountains, and Verdugo Mountains-San Rafael Hills. Photo: NPS.

These areas outside of SMMNRA represent a continuum of land ecosystems that broadens the diversity and representation of Mediterranean-type ecosystem components found in SMMNRA.

but is not fossiliferous in the Santa Monica Mountains. The paleontological resources in the study area outside of SMMNRA contribute to this natural resource theme, by contributing resource types that are not represented in SMMNRA.

Conclusion: Geologic History

Fossil resources representing the "Geologic History" subthemes the Triassic - Cretaceous Periods, Paleocene - Eocene Epochs, and Oligocene - Recent Epochs are found in the study area, specifically in the Conejo Mountain – Las Posas Hills area, Santa Susana Mountains, Simi Hills and Upper Santa Clara River basin would enhance the protection of the area's fossil resources by adding to the quantity and diversity of resources already present in SMMNRA.

Land Ecosystems: Grassland, Dry Coniferous Forest, Chaparral

The "Land Ecosystems" theme describes the characteristic groupings of some of the more common and conspicuous communities of land-dwelling plants and animals found in natural areas. Since the kind of community of plants and animals is intimately related to a kind of environment, the group of organisms plus their environment is referred to as an ecosystem. Since the vegetative components of ecosystems are generally more conspicuous than are the animal members and more stable with respect to location and population density, the names of land ecosystems stem from the types of vegetation which characterize them. The following subthemes related to "Land Ecosystems" are represented in the study area:

- Grassland
- Dry Coniferous Forest
- Chaparral

Types of land ecosystems represented in SMMNRA and the other portions of the study area include those categorized within the broad subthemes grassland, dry coniferous forest, and chaparral. These ecosystems are all part of the broader Mediterranean-type ecosystem which is represented by SMMNRA and considered one of the most biologically diverse and threatened areas in the continental United States.

Many of the vegetation types found in SMMNRA that represent these subthemes are also found throughout most of the remainder of the study area, including perennial grassland, chaparral, coastal sage scrub, and various types of woodlands. Beyond SMMNRA, the study area includes topographical, edaphic, and microclimatic conditions that are not found in the national recreation area. These conditions support vegetation communities not well represented in SMMNRA. Specific examples include bigcone Douglas-fir forest, canyon live oak, California walnut woodland and other vegetation types found in the Santa Susana Mountains. The uplifted sediments in the Simi Hills have resulted in conditions that support unique patterns of sensitive vegetation. The geology and resulting soil conditions in the Conejo Mountain area has resulted in the presence of many endemic dudleya plant species not found elsewhere. The location of the Verdugo Mountains-San Rafael Hills provides an ecological stepping stone between larger habitat areas such as the Santa Monica Mountains and the San Gabriel Mountains. These habitat areas throughout the study area also support many sensitive plant and animal species. These areas outside of SMMNRA represent a continuum of land ecosystems that broadens the diversity and representation of Mediterranean-type ecosystem components found in SMMNRA.

Grassland

In the NPS' natural resource thematic framework, the "grassland" theme as represented in the South Pacific Border Region is described as native grassland dominated by purple needlegrass (*Nassella pulchra*). Much of interior California originally supported native grassland, and in the San Fernando Valley and Los Angeles basin areas, prairie ecosystems likely were present in the flat areas above the floodplains of the Los Angeles River and its tributaries. Areas of grassland were likely associated with oak savanna, which historically would have included native grassland species, interspersed with single oak trees. Over time, introduced grass and forb species have converted native grassland to annual grassland. Remnant native grassland is very rare and typically is only found in scattered patches.

Within SMMNRA, scattered patches of native grassland have been documented at La Jolla



Laskey Mesa in the Simi HIlls contains one of hte most outstanding examples of native grasslands in southern California. Photo: NPS.

Valley in Point Mugu State Park, and on NPS-owned land near Deer Creek, Yellow Hill and Cheeseboro Canyon.

Beyond SMMNRA in the study area, Laskey Mesa, located in the Upper Las Virgenes Open Space Preserve in the Simi Hills contains one of the most outstanding examples of native grasslands in southern California. Although the 200-acre plateau was used for grazing and much of the area is disturbed, the unique loamy soil hosts native bunchgrasses, as well as one of the only know locations containing the federally endangered, San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*). Before it was re-discovered at Laskey Mesa in 1999, the San Fernando Valley spineflower was presumed to be extinct. In 2000, the same species was discovered near the Santa Clara River at Newhall Ranch, which is also partially within the study area in the Santa Susana Mountains. The San Fernando Valley spineflower is endemic to Los Angeles and Ventura Counties and is largely limited to the Chatsworth formation (pers. comm. David Magney 2011). Because its habitat is typically found on mesas with shallow soils, this species has been greatly diminished over time due to the desirability of these types of sites for human development and activity.

Native grassland is also found in other portions of the study area, including the highest area in the Santa Susana Mountains, Oat Mountain, which provides outstanding examples of oak savanna and a mosaic of native grassland (pers. comm. David Magney 2011, pers. comm. Suzanne Goode 2011).

Dry Coniferous Forest

In the NPS' natural resource thematic framework, the "Dry Coniferous Forest" subtheme as represented in the South Pacific Border Region is described as including belts of coniferous forest and woodland, where the climate is warmer and drier than higher elevation forest. This theme is currently not represented in the vegetation types in SMMNRA. However, the *San Gabriel Study* (NPS 2013f) identified several examples of vegetation that represent this subtheme in the San Gabriel Mountains and foothills including montane hardwood, montane hardwood-conifer, Sierran mixed conifer, eastside pine, Jeffrey pine, ponderosa pine, pinyon-juniper woodland, juniper woodland, and closed-cone pine-cypress vegetation types. The Upper Santa Clara River area also includes pinyon-juniper woodland, juniper woodland, and Joshua tree vegetation. The *San Gabriel Study* (NPS 2013f) concluded that no other national park unit in the South Pacific Border natural region or any other comparably managed sites contains the types of Dry Coniferous Forest habitat or unique and unusual subalpine species found in the San Gabriel Mountains.

Beyond the San Gabriel study area this subtheme is represented in some areas, most notably in the Santa Susana Mountains, which are home to a number of rare vegetation types and species occurrences that help to illustrate the distribution and evolution of flora, including bigcone Douglas-fir, an ancient relic.

Chaparral

In the NPS' natural resource thematic framework, the "Chaparral" subtheme as represented in the South Pacific Border Region is described as vegetation dominated by plants that are broad-leafed, mainly evergreen species of shrubs or low trees, including dense scrub and woodland. "Chaparral" is further divided into two categories, "shrub-dominated" and "woodland." In the study area, the latter includes mixed chaparral, chamise-redshank chaparral, montane chaparral, and coastal sage scrub, with "woodland" vegetation including

coast live oak woodland, valley oak woodland, montane hardwood forest, and riparian forest.

SMMNRA contains an extensive mosaic of vegetation dominated by coastal sage scrub and chaparral communities. Coastal sage scrub is one of the most threatened plant communities in California with only 15% of its historic range remaining in southern California, making this habitat a high priority for preservation (CBI 2001, Davis et al. 1998). In SMMNRA, some unusual communities of chaparral are present including those dominated by red shank (*Adenostoma sparsifolium*) (NPS 2002). In addition, coast live oak woodland on north facing slopes and shaded canyons and valley oak woodland (savanna) found at lower elevations on alluvial soils contribute to the diversity of land ecosystems represented in SMMNRA.

The San Gabriel study area also includes extensive chaparral related communities. The area's inland location and greater elevational range has resulted in vegetation types and patterns that differ from those characteristic of SMMNRA. The study concluded that of the national park units and comparably managed areas that contain significant chaparral ecosystems in the South Pacific Border natural region, no other site has been so significant for historical and contemporary research on chaparral ecosystems and watersheds as the San Dimas Experimental Forest located within the San Gabriel Mountains (note that the San Dimas Experimental Forest is located outside of the Rim of the Valley Corridor study area).

Beyond SMMNRA and the San Gabriel Mountains, the study area includes a diverse range of vegetation representing the subtheme "chaparral." As described in *Chapter 2* and earlier in this chapter, the Conejo Mountain area, Santa Susana Mountain, Simi Hills, Verdugo Mountains-San Rafael Hills, and portions of the Santa Monica Mountains outside of SMMNRA all include a variety of shrub-dominated and woodland type vegetation communities, including many that support habitat for federally listed plant and animal species.

Conclusion: Land Ecosystems

The study area contains a high level of biodiversity and outstanding examples of Mediterranean-type plant communities, rare and sensitive plant and animal species, and endemic species that occur nowhere else. SMMNRA represents the theme "Land Ecosystems" through these communities and their associated high level of biodiversity.

As identified in the *San Gabriel Study* (NPS 2013f), the combination and quantity of significant chaparral ecosystems and dry coniferous forest resulting, in part, from the extreme elevation changes in the San Gabriel Mountains represent a wider diversity of habitats than is found in SMMNRA or comparably managed



Valley oak woodland and savanna contribute to the diversity of land ecosystems represented in the SMMNRA. Photo: NPS.





Riparian vegetation is found in several subareas in the Rim of the Valley corridor, including the Arroyo Seco corridor (left). Riparian habitat support a variety of vegetation types and diverse wildlife, cinluding rare, threatened and endangered species, such as the Arroyo toad (right). found in the canyon of the Arroyo Seco. Photo (left): NPS. Photo (right): USFWS.

areas. Because of their high elevation, the San Gabriel Mountains contain rare examples of southern California subalpine vegetation not represented by any other national park unit in the South Pacific Border Region.

Most of the resources in the study area representing the theme "Land Ecosystems" expand on those resources already represented in SMMNRA. However, the resources related to "Dry Coniferous Forest" subtheme in the Santa Susana Mountains are not represented in SMMNRA so would be suitable as a new national park unit, particularly when considered in combination with the native grassland and chaparral resources also present in this area.

Aquatic Ecosystems: Streams

The theme "Aquatic Ecosystems" is based on geomorphic and other physical aspects of aquatic ecosystems. "Streams," a subtheme related to Aquatic Ecosystems is represented in the study area.

This subtheme represents aquatic ecosystems with flowing waters. Two types of aquatic ecosystems, riparian habitat and alluvial fan sage scrub represent this subtheme as well as within the broader Mediterranean-type ecosystem. As with land ecosystems, there are habitat types classified as "aquatic ecosystems" that are present outside of the park that are represented in SMMNRA including high quality riparian habitat, as well as habitat types that are not represented in the park, including alluvial fan sage scrub.

Riparian Habitat

High quality riparian habitat similar to that found in SMMNRA is also found in other parts of the study area. River and stream systems in the canyons and valleys of the study area support a variety of vegetation types which in turn support a high diversity of wildlife including rare, threatened and endangered species. Some of the highest quality riparian habitat outside of SMMNRA occurs in the Upper Santa Clara River watershed and the foothill canyons of the San Gabriel Mountains.

The *San Gabriel Study* (NPS 2013f) concluded that the riparian habitat evaluated within the San Gabriel Watershed and Mountains study area contains a high diversity of wildlife including threatened and endangered species such as the Santa Ana sucker, arroyo toad, unarmored threespine stickleback and the southwestern willow-flycatcher. Additionally, the study determined that although several national park units in the South Pacific Border natural region contains excellent representations of river and riparian habitat, the San Gabriel Mountain river systems differ significantly in geologic character and processes and diversity of river habitats and that of the comparably managed areas, the San Gabriel Mountain river systems differ in geologic character and geologic processes, habitat type, fisheries and opportunities for access and interpretation.

Beyond SMMNRA and the San Gabriel Mountains, the study area includes many examples of riparian habitat, including types not represent in SMMNRA. White alder riparian woodland and forest and California bay forest are found in places such as the Verdugo Mountains-San Rafael Hills and Griffith Park. In the Santa Susana Mountains, the numerous canyons contain sensitive natural communities that are riparian, such as black cottonwood forest and Fremont cottonwood forest are found. The Upper Santa Clara River area includes more sensitive plant community types (at least seventeen) than any other portion of the study area (LADRP 2012a). In addition to the variety of riparian vegetation types along the Santa Clara River corridor, tributaries that connect the Santa Clara River to the Santa Susana Mountains and San Gabriel Mountains illustrate some of the unique natural communities in the study area.

Alluvial Fan Sage Scrub

Alluvial fan sage scrub is a distinct and rare plant community found on alluvial fans and floodplains along the southern base of the Transverse Ranges and portions of the Peninsular Ranges in southern California. As discussed in the previous chapter on significance, alluvial fan sage scrub habitat is extremely rare and not found in SMMNRA. However, in the study area, the San Gabriel Mountain foothills, including those along the Upper Santa Clara River, contain some of the best remaining examples of alluvial fan sage scrub in the Los Angeles basin.

As determined through the *San Gabriel Study* (NPS 2013f), excellent examples of remaining alluvial fan sage scrub are not found in any national parks in the Transverse and Peninsular Ranges nor in national park units in the South Pacific Border Region which represent the theme "Streams." An analysis of ten of the most well-developed alluvial fan vegetation stands in Los Angeles, Riverside and San Bernardino Counties found that Big Tujunga Wash and the Upper Santa Clara River, both in the study area, and San Antonio Canyon are the three sites which exhibit the most species diversity, and the San Gabriel River is among one of two sites that exhibits the greatest structural diversity (Hanes et al. 1989).

Beyond Big Tujunga Wash and the Upper Santa Clara River, the study area may include additional smaller sites containing alluvial fan sage scrub, such as the mouth of the Arroyo Seco canyon and other small drainages in the San Gabriel Mountain foothills may also support this vegetation type. The significant alluvial fan sage scrub areas within the study area are primarily privately owned or managed by local water districts. However, several of these areas are adjacent to public lands and trails providing potential interpretive opportunities. The Tujunga Wash area contains publicly accessible areas including Oro Vista Park and Hansen Dam Recreation Area.

As described in the *San Gabriel Study* (NPS 2013f), the remaining large, intact stands of alluvial fan sage scrub in southern California are mostly located on privately owned lands or lands not expressly managed for resource values or public enjoyment. Therefore there are no comparably protected areas containing this unique habitat.

Conclusion: Aquatic Ecosystems

The study area's diverse and outstanding examples of aquatic ecosystems, which are part of the broader Mediterranean-type ecosystem, include a variety of vegetation types, some of which are considered imperiled and provide habitat for sensitive and rare plants and animals. As with the theme "Land Ecosystems," SMMNRA represents the theme "Aquatic Ecosystems" through these communities and their associated high level of biodiversity.

Many of the high quality riparian habitat types in the study area expand upon the theme of "aquatic ecosystems" already represented in SMMNRA. As determined in the *San Gabriel Study* (NPS 2013f), no national park unit in the South Pacific Border Region contains the alluvial fan vegetation unique to the Transverse and Peninsular Ranges of southern California. Of the comparably managed areas, the San Bernardino National Forest is the only publicly accessible protected area with significant alluvial fan sage scrub. The *San Gabriel Study* (NPS 2013f) concluded that the San Gabriel foothills, including those areas in the study area along the Upper Santa Clara River, as well as the Tujunga Wash area, are suitable for inclusion in the national park system.

Cultural Resource Themes

As described in the previous section, "Summary of National Significance of the Rim of the Valley Corridor Study Area", the NPS cultural resource thematic framework is an outline of major themes and concepts that help to conceptualize American history. The NPS Thematic Framework (2000) for historical themes provides guidance on:

- evaluating the significance of resources for listing in the National Register of Historic Places, for designation as national historic landmarks, or for potential addition to the national park system
- assessing how well the themes are currently represented in existing units of the national park system and in other recognized areas; and,
- expanding and enhancing the interpretive programs at existing units of the national park system to provide a fuller understanding of our nation's past (NPS 2000)

Peopling Places

The theme "Peopling Places" examines human population movement and change through prehistoric and historic times. The following topics or subthemes related to the theme "Peopling Places" are represented in the study area:

- Ethnic Homelands
- Migration from Outside and Within
- Encounters, Conflicts, and Colonization

Ethnic Homelands

Archeological sites recorded within the study area depict more than 10,000 years of human settlement. In SMMNRA, some sites have been listed or determined eligible for listing in the National Register of Historic Places. The national recreation area also includes the Saddle Rock Ranch Pictograph Site, considered to be nationally significant and NHL eligible. Beyond SMMNRA, the study area includes several sites that are listed in the National Register of Historic Places, or determined eligible for listing, including Burrow Flats Painted Caves and Old Susana Stage Road (Prehistoric Village Site, Rockshelter and Petroglyphs), both of which are listed in the National Register of Historic Places. Another twelve prehistoric resources in the U.S. Forest Service managed areas of the San Gabriel Mountains have been determined eligible for listing in the national register. Additionally, hundreds of other archeological sites have been identified throughout the study area, and while most have not been evaluated yet, these sites provide great potential for archeological discovery.

Migration from Outside and Within

The study area contains nationally significant historic trails and migration routes already represented in SMMNRA and national trails. The Juan Bautista de Anza National Historic Trail (Anza NHT) traverses both SMMNRA and other portions of the study area. Several sites within and outside of SMMNRA interpret the trail and reflect the character of the landscape and some associated structures that convey the significance of the historic period, including Los Encinos State Park at the base of the northern slope of the Santa Monica Mountains. Two other nationally significant resources representing the theme of "Migration" occur in the study area outside of SMMNRA, including the Old Spanish National Historic Trail (Old Spanish NHT), and U.S. Highway 66 (Route 66). The Old Spanish NHT represents the first attempt by Europeans to reach Alta California from the inland southwest since the Yuma uprising closed the Anza Trail nearly fifty years earlier. The route terminates in the study area at El Pueblo de Los Angeles Historical Monument, a historic district listed in the National Register of Historic Places and located in the oldest section of Los Angeles. Route 66, which is supported through a NPS program, is significant as the nation's first all-weather highway linking Chicago to Los Angeles and has become a symbol of the American people's heritage of travel and their legacy of seeking a better life. The route traverses the study area from Pasadena, along the Arroyo Seco corridor to downtown Los Angeles. Both the Anza Trail and Old Spanish NHT are part of the NPS' national trails system, with the Anza Trail also traversing SMMNRA.

Encounters, Conflicts and Colonization

Similar to the subtheme of "Migration from Outside and Within," the Anza NHT and Old Spanish NHT represented the theme, "Encounters, Conflicts and Colonization." The

Anza NHT is represented in both SMMNRA and other portions of the study area, while the Old Spanish NHT occurs in the study area outside of SMMNRA. As national trails, these resources and subthemes are represented in the national park system. Saddle Rock Ranch rock art site (CA-LAN-717), determined eligible for designation as a national historic landmark by the Secretary of the Interior in 1990, is a rare example of a Chumash pictograph displaying mounted horsemen, considered to be representative of Chumash encounters with the 1769 Portola Expedition.

Given the hundreds of archeological sites throughout the study area that have not yet been evaluated for significance, there is potential for these sites to enhance the significance of archeological resources at SMMNRA. As an example, following a recent fire in SMMNRA, a glass bead was discovered that could only have become part of the Native American trade system after European contact. It was not previously known that this area of SMMNRA was occupied by Native Americans during the time of contact, and illustrates how future significant discoveries in the study area could enhance the area's significance in representing this subtheme of "Encounters, Conflicts and Colonization."

Conclusion: Peopling Places

Resources representing the theme "Peopling Places" are found in the study area as represented by two federally designated national historic trails (Anza NHT and Old Spanish NHT) and the Route 66 program. While there is high potential for future discovery of resources related to this theme in the study area beyond SMMNRA, there are no designated national historic landmarks that represent "Peopling Places," so there are no existing resources representing this theme that would be suitable as a new national park unit.

Expressing Cultural Values

The theme "Expressing Cultural Values" covers expressions of culture – people's beliefs about themselves and the world they inhabit. This theme also encompasses the ways that people communicate their moral and aesthetic values (NPS 2000). The following topics or subthemes related to "Expressing Cultural Values" are represented in the study area:

- Architecture: Gamble House, Case Study House Program 1945-1966
- Popular and Traditional Culture: Rose Bowl
- Visual and Performing Arts (Filmmaking): Paramount Ranch

Architecture

The subtheme "Architecture" is focused on the development and expression of building design within the United States. It highlights the careers and works of leading architects, structures of outstanding value in design, the evolution of significant architectural styles, and structures richly representative of particular types or geographical regions. The study area contains nationally significant examples of Craftsman Architecture (1890-1915), as represented by the Gamble House National Historic Landmark and Modern Architecture (1945-1966), as represented by the Case Study House Program within and around the study area.

The Gamble House National Historic Landmark in Pasadena has been identified as embodying the highest level of the California Bungalow style associated with the Arts and Crafts movement of the early 20th century. The house has been open to the public for tours since 1966 and also offers educational programs as stipulated by the Gamble heirs. The institutional mission is to preserve the house and educate the public about the vital role of historic architecture in understanding the richness of the past and the potential for the future. The property underwent an extensive exterior conservation effort in the 2000s.

Sites representing the Case Study House Program, particularly the Eames House which has been designated an NHL, have been determined to be significant for their association with a multi-year program of experimental housing which had a profound and enduring impact on Modernism. Of the 24 case study houses that were built, eight are within the study area, with another eleven within four miles of the study area (seven are within one-half mile of the study boundary). Nine of the 24 houses constructed as part of the Case Study Program are listed in the NRHP with the Eames House being the only NHL (Moruzzi 2013).





Both the Gamble House National Historic Landmark (left) and Case Study house #22 (Stahl House, right), listed in the National Register of Hisotric Places represent the theme of "Architecture" within the study area. While the Gamble House represents Craftsman architecture, both the Stahl House and the Eames House National Historic Landmark (not shown) are both representative of the Case Study House Program and examples of modern architecture. Photos: NPS.

As described in the previous section, National Significance, the Eames House National Historic Landmark (Case Study House #8) is considered one of the most significant experiments in American domestic architecture. The property is privately owned by the non-profit Charles and Ray Eames House Preservation Foundation, Inc. which was established in 2004 to preserve and protect the Eames House and to provide educational opportunities. The foundation provides opportunities for tours as well as educational exhibits at the property (Charles and Ray Eames House Preservation Foundation, 2014).

The Stahl House, designed by Pierre Koenig and built in 1960, is considered one of, if not the most iconic house constructed in the Case Study House program, and "among the most radical and reductive" (Seward 2013). Limited public viewing opportunities of the house with docents are made available by the owners. Besides the Stahl House, the four other Case Study houses in the study area listed in the national register are privately owned and not normally open for public visitation.

These properties associated with the Case Study House program illustrate the subtheme of "Modern Architecture", possess historical integrity, and offer some opportunities for public visitation and enjoyment. However, the Eames House stands apart as an NHL that possesses an extraordinarily high level of material integrity while providing for public access and enjoyment.

National Park Service Units

A national historic landmark theme study was prepared in 1986 that focused on architecture in national parks. The study identified a variety of buildings and districts throughout the history of national parks that meets the criteria for designation as a national historic landmark (NPS 1986a). Although several structures were identified that were constructed during the period identified for the "Craftsman Architecture" subtheme, none of them is a residential structure that reflects the same architectural style as the Gamble House.

Similarly, the study does not identify any national park resources comparable to the Eames House or other Case Study Program houses that reflect the theme of Modern architecture (NPS 1986a). In 1956, the National Park Service launched Mission 66, a ten-year park development and improvement program promoting modern architecture in the national parks, but none of the structures from this program reflects the residential architecture reflected in the case study houses, such as the Eames House.

National Historic Landmarks (NHLs)

Craftsman Architecture (1890-1915)

The Fonthill, Mercer Museum, and Moravian Pottery and Tile Works property in Doylestown, Pennsylvania is the only other NHL associated with the Craftsman architecture subtheme (designated 1985). These three sites are associated with Henry Chapman Mercer (1856-1930), designer of Arts and Crafts ceramics, and a visionary architect who was one of the first designers to work with reinforced concrete as a building material. Although associated with the subtheme Craftsman architecture, the Fonthill home is an eclectic mix of Medieval, Gothic and Byzantine architectural styles and is significant as an early example of poured reinforced concrete. The home also served as a showplace for Mercer's Moravian tiles which are associated with the American Arts and Crafts Movement. The site is privately owned and open to the public.

Although the Gamble House and the Fonthill, Mercer Museum and Moravian Pottery and Tile Works properties are both associated with the Craftsman architecture subtheme, the resources and associated stories of these properties are distinctly different due to their different architectural styles and associated stories related to the Arts and Crafts Movement.

Modern Architecture

In 2003, the publication *Modern Architecture in the United States of America: Skyscrapers, Houses, Churches, College Buildings and Campuses, and Museums, 1923-1966, National Historic Landmark Theme Study* identified a number of residences that reflect the "Modern Architecture" subtheme. Examples include a number of houses designed by Frank Lloyd Wright, primarily located in Illinois and Wisconsin where Wright lived in and practiced. Of 15 designated national historic landmarks representing this theme, only one is located in California, Hanna House ("Honeycomb House") in Palo Alto (Frank Lloyd Wright, 1937). Another nineteen modern houses have been identified as potentially meeting the criteria for national historic landmark designation, including nine in California:

- Roos House, San Francisco, California (Bernard R. Maybeck, 1909)
- Hollyhock (Barnsdall) House, Los Angeles, California (Frank Lloyd Wright, 1917)
- Textile Block Houses, Los Angeles, California (Frank Lloyd Wright, 1923)
- Lovell Beach House, Newport Beach, California (Rudolph Schindler, 1926)
- Lovell "Health House," Los Angeles, California (Richard Neutra, 1929)
- Kaufmann Desert House, Palm Springs, California (Richard Neutra, 1946)
- Tremaine House, Montecito, California (Richard Neutra, 1948)
- Moore House, Ojai, California (Richard Neutra, 1952)
- Sea Ranch, California (MLTW: Moore, Lyndon, Turnbull & Whitaker; 1965)

None of these houses reflects the story of the Case Study Houses Program that is represented by the Eames House or other Case Study Program houses listed in the National Register of Historic Places.

Comparably Managed Areas

Craftsman Architecture (1890-1915)

There is no other comparably managed area that represent Craftsman architecture illustrating principal achievements of the Greene and Greene Architects. There are three houses are listed in the National Register of Historic Places including the Robert R. Blacker House (Pasadena, CA), William R. Thorsen House (Berkeley, CA), and Charles M. Pratt House (Ojai, CA) related to Greene and Greene Architects and Craftsman architecture. The national register identifies the Blacker House and Pratt House as significant at the national level, but both are private residences and have limited public access and public enjoyment opportunities. The Thorsen House is identified as significant at the state level, but it is also privately owned, used as a residence, and has limited opportunities for public enjoyment.

Modern Architecture

Aside from the Eames House, there is no example of the Case Study House Program that is expressly managed for conservation and public enjoyment. Of the Case Study Houses listed in the National Register of Historic Places, all are privately owned and the major-

Both the Eames and Gamble houses are privately owned by organizations with missions dedicated to preserving these resources and making them available to the public.

ity is not available for public visitation. Only Case Study House #22 (Stahl House), located within the study area, is open to the public for visitation.

Conclusion: Architecture

The Gamble House and Eames House national historic landmarks represent stories and subthemes distinct from those already represented in the national park system. Although other sites listed in the National Register of Historic Places reflect similar subthemes and stories, none of these related sites embodies the same level of significance and integrity, while providing for public access and enjoyment. Both the Eames and Gamble houses are privately owned by organizations with missions dedicated to preserving these resources and making them available to the public. In this context, both the Gamble House and the Eames House stand alone as representatives of their respective subthemes and associated stories. Though not represented in the national park system, these cultural resources are comparably protected by other organizations.

Popular and Traditional Culture – Recreation and Culture, Sports Facilities

The Rose Bowl National Historic Landmark has outstanding significance in the field of recreation as the site of the oldest post-season college football "bowl" game, held annually at the start of very new year since 1916. It has been held at the Rose Bowl since its completion in 1922 (except for one year during World War II). The stadium currently functions as the home of the University of California, Los Angeles football team.

The Rose Bowl is owned by the City of Pasadena and managed by the Rose Bowl Operating Company, a non-profit organization whose role is to return economic and civic value to the City of Pasadena through management of the Rose Bowl stadium and the adjacent golf course complex. In addition to being open to the public for civic, entertainment and sporting events, the Rose Bowl recently began offering guided tours that highlight the stadium's history and significance.

National Park Service Units

No national park units represent the subtheme of "Popular and Traditional Culture – Recreation and Culture, Sports Facilities."

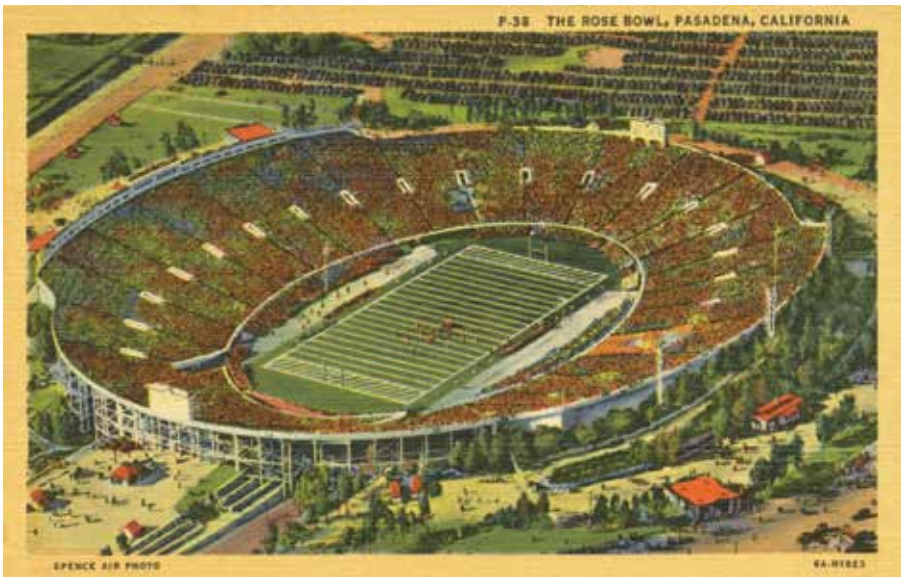
National Historic Landmarks (NHLs)

In 1986, the National Park Service prepared the *Recreation in the United States: National Historic Landmark Theme Study* which identified eight stadiums in the U.S. that had the potential to be designated as national historic landmarks. In addition to the Los Angeles Memorial Coliseum, which was already designated a national historic landmark at the time of this study, three additional sites were later designated national historic landmarks, including the Rose Bowl Stadium. The other two sites include Harvard Stadium and the Yale Bowl.

The Los Angeles Memorial Coliseum, constructed in 1921-23, possesses national and international historic significance as the focal site of the Xth Olympiad of the modern era, the Los Angeles Summer Games of 1932. It is also highly important as the scene of numerous other sporting and civic events, including the 1984 Olympic Games and as a key example of the architectural work of John and Donald Parkinson, two of the most prominent Los Angeles architects of the early 20th century (NPS 1984b). The Coliseum is publicly owned, but managed and operated via a lease agreement with the University of Southern California (USC) which uses the stadium as the home field for its football team. The facility continues to be actively used and open to the public for a diverse range of sports, entertainment, and civic events.

Erected in 1903, Harvard Stadium in Boston, Massachusetts was the first college stadium in the United States and remains the earliest still extant. Its design and its multipurpose use became a prototype for the design of college stadiums that were built by other universities in the United States in the 20th century (NPS 1987a). The stadium is privately owned by Harvard University and continues to be open to the public and used for athletic events.

The Yale Bowl in New Haven, Connecticut is the second oldest, active college stadium in the country and was the largest stadium when it was constructed (1914). The Yale Bowl is significant for its "bowl" shape which provided fine views for the spectators from all seats and was emulated by many other stadiums, as well as for Yale's early influence in college football





The Rose Bowl stadium has continually hosted the post-season football game associated with the Tournament of Roses (ca. 1940s, left; 1914, right). Recently, tours of the site have been availble to the public. Photos: Anne Dove (left), NPS (right).

In addition to being open to the public for civic, entertainment and sporting events, the Rose Bowl recently began offering guided tours that highlight the stadium's history and significance.

(NPS 1987b). Yale University owns the facility which continues to be used for public sporting events.

Comparably Managed Areas

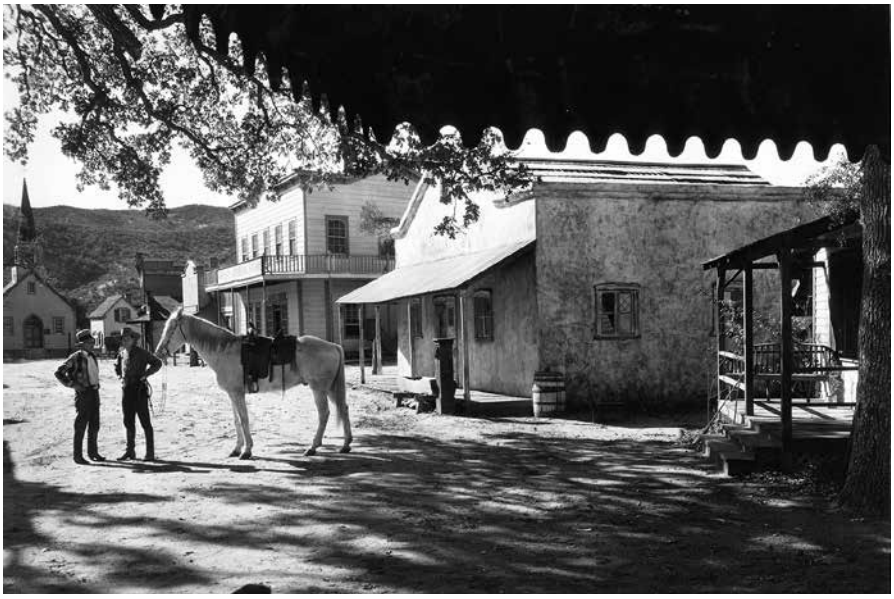
In the *Recreation in the United States: National Historic Landmark Theme Study* (NPS 1986b), five additional sites were identified has having national significance. Of these, Grant Park Stadium (Soldier Field) in Chicago, Illinois, was designated a national historic landmark in 1987, but delisted in 2006 based on renovations that affected the stadium's historic integrity. Another stadium, Ohio Stadium at the campus of Ohio State University in Columbus, Ohio, was listed in the National Register of Historic Places in 1974. The remaining three stadiums identified in the theme study as eligible for NHL designation are the University of Illinois Memorial Stadium (Urbana, Illinois), University of Notre Dame Main and South Quadrangles Historic District and Stadium (South Bend, Indiana), and University of Michigan Stadium (Ann Arbor, Michigan) and are not listed in the national register. All of these stadiums have undergone extensive renovations since the 1986 theme study.

Conclusion: Popular and Traditional Culture – Recreation and Culture, Sports Facilities

In addition to the Rose Bowl, there are three other similar properties that reflect the same subtheme of "Recreation and Culture, Sports Facilities": Harvard Stadium, Los Angeles Memorial Coliseum, and the Yale Bowl. All three of these sites, like the Rose Bowl, continue to be used for the purposes for which they were originally constructed. Harvard Stadium and the Yale Bowl are both privately owned facilities used primarily for university sporting events.

The Rose Bowl and Los Angeles Memorial Coliseum are also used for university sporting events, but both are publicly owned and also serve as sites for civic, cultural, and other diverse events for the public. Of the four stadiums, only the Rose Bowl offers regular opportunities for public access and enjoyment beyond participation at the stadiums' events as spectators.

Both the Rose Bowl and Los Angeles Memorial Coliseum represent additional stories related to the Olympic Games (the 1932 and 1984 games). Beyond these stories, the Rose Bowl's significance as the long-term site of the oldest and most renowned post-season college football "bowl" game, which is also tied to the civic work of the Pasadena Tournament of Roses Association, is not comparably reflected in the other three sites. Although the Rose Bowl is currently managed consistent with the historic significance of the site, preservation, interpretation and education are not the primary purposes of the Rose Bowl Operating Company and thus the Rose Bowl is not considered comparably managed. The themes represented by the Rose Bowl are not represented in the national park system.







Established in 1927 as a movie ranch, Paramount Ranch in SMMNRA has been used for a variety of filming activities. The top shows the original western town with actor Richard Arlen, 1943. The center photo shows production of the television show, "Dr. Quinn, Medicine Woman" (ca. 1990s), and the bottom image shows production of the television show, "Carnivale" (2003). Photos: Mike Malone (top), NPS (center and bottom).

Visual and Performing Arts (Filmmaking)

Within SMMNRA, Paramount Ranch represents the subtheme "Visual and Performing Arts" as related to filmmaking. As described in Chapter 2, the Los Angeles metropolitan region has a long, rich film and movie-making history dating back to 1909 with the establishment of the William Selig and Francis Boggs (Polyscope Company), the first permanent film studio. The eastern Santa Monica Mountains were used early on for location filming. Popular sites included Bronson Canyon, Runyon Canyon, the Griffith Observatory, the Hollywood Bowl, and the Hollywood Hills. The industry also moved to Malibu in 1926, establishing the Malibu Beach Motion Picture Colony (Kaplan 1987; Bible, Wanamaker, and Medved 2010). The Santa Monica Mountains and San Fernando Valley's ranches and inexpensive land also attracted major studios. Paramount Ranch (eligible for listing in the National Register of Historic Places), established in 1927 in what is now SMMNRA, is one of the best remaining examples of a movie ranch from this era. Other locations within the study area also attracted film production companies. Porter Ranch, a 500-acre site in the Santa Susana Mountains, was heavily used for filming, as was Iverson Ranch in Chatsworth, Corriganville in the Santa Susana Pass area, and Ahmanson Ranch in Upper Las Virgenes Canyon (Bible, Wanamaker, and Medved 2010).

SMMNRA is the only national park unit that includes resources reflecting the theme "Visual and Performing Arts" as it relates to filmmaking and there are no national historic landmarks that reflect this story. There are national historic landmarks relating to live theater, movie palaces, music recording, radio and popular culture (Graceland, Sun Record Company-Memphis Recording Service, Ryman Auditorium), but none that specifically relates to filmmaking. Three sites, Hollywood Boulevard Commercial & Entertainment District, Joel McCrea Ranch, and Will Rogers House, are national register listed properties related to this theme, while two others, Hollywood United Methodist Church and William S. Hart County Park have been determined eligible for listing. There is potential for other significant sites reflecting this filmmaking theme to be identified and evaluated for national historic landmark eligibility, and the potential exists for future preservation

SMMNRA is the only national park unit that includes resources reflecting the theme Visual and Performing Arts as it relates to filmmaking and there are no national historic landmarks that reflect this story.

and public enjoyment of significant resources related to this theme, but additional research would be needed. This theme has the potential for focused research, such as via a national historic landmark theme study. Should these resources be found to be nationally significant, they could contribute to expanding the significance of SMMNRA as it relates to the theme "Expressing Cultural Values, Visual and Performing Arts."

Conclusion: Visual and Performing Arts (Filmmaking)

The subtheme "Visual and Performing Arts", as it relates to filmmaking, is represented in SMMNRA. There is high likelihood that other significant resources related to this topic occur within the study area, but this determination would require additional study about their suitability for inclusion in the national register. However, at this time, there are no known national historic landmark-eligible resources reflecting this subtheme in the study area beyond SMMNRA that would be suitable as new national park areas.

Expanding Science and Technology

This theme focuses on science, which is modern civilization's way of organizing and conceptualizing knowledge about the world and the universe beyond. Technology is the application of human ingenuity to modification of the environment in both modern and traditional cultures. The following topics or subthemes related to "Expanding Science and Technology" are represented by nationally significant resources in the study area:

- Experimentation and Invention: Jet Propulsion Laboratory (JPL), Mount Wilson Observatory
- Technological Applications: JPL, Mount Wilson Observatory
- Scientific Thought and Theory: JPL, Mount Wilson Observatory

JPL resources relate to the *Man in Space National Historic Landmark Theme Study* (*Man in Space Theme Study*) (NPS 1984a) prepared by the NPS, which evaluated resources related to the goals of landing a man on the moon and exploring the earth, planets and solar system. The study recommended some of those resources for designation as national historic landmarks. The *Man in Space Theme Study* focused on resources associated with NASA and United States Air Force installations, but noted that there were many contractor facilities that were important in the space program that were not examined as part of the theme study.

The Mount Wilson Observatory was evaluated as part of the *San Gabriel Study* (NPS 2013f) which found that there are no units in the national park system or areas managed by other entities that have the combination of resources as the San Gabriel Mountains has in its representation of the theme "Expanding Science and Technology", and that there are few national historic landmarks that compare to the Mount Wilson Observatory. Because the Mount Wilson Observatory has already been determined a suitable addition to the national park system, the following analysis of nationally significant resources representing the theme "Expanding Science and Technology" is focused on resources located at JPL.

Jet Propulsion Laboratory

Jet Propulsion Laboratory (JPL) is a federally funded research and development facility managed by the California Institute of Technology (Caltech) for the National Aeronautics and Space Administration (NASA). As described in *Chapter 2: Resource Description*, JPL has served a significant role in the expansion of science and technology in fields ranging from space exploration to communications. Experimentation and invention at JPL has played a significant role in scientific innovation in the areas of astrophysics, rocket science, and deep space exploration. As described in the previous section, "National Significance", the *Man in Space Theme Study* identified two facilities at JPL that met eligibility for NHL designation, the Space Flight Operations Facility and the Twenty-five Foot Simulator. Given the security requirements for JPL's current operations, the facility has limited public access with public visitation limited to open house events, (typically once a year) and tours for groups and individuals on an advance reservation basis. All tours commonly include a multimedia presentation that provides an overview of JPL's activities and accomplishments, and guests may also visit the von Karman Visitor Center, the Space Flight Operations Facility, and the Spacecraft Assembly Facility. The 25-foot Space Simulator is not part of their regular tours.



The Twenty-Five Foot Space Simulator National Historic Landmark at JPL continues to be used for testing vehicles for U.S. space missions. Photo: NPS.

National Park Service Units

There are no units in the national park system that relate to the topics represented by the significant resources at JPL. Under a previous thematic framework for cultural resources, national park units were listed under the subtopic of "Physical Sciences." There were no park units identified for "Astronomy." Two sites were identified for representation of "Physics," Benjamin Franklin National Memorial (Affiliated Area) and Edison National Historic Site. Edison National Historic Site was also identified for the theme, "Chemistry." The *Scientific Discoveries and Inventions National Survey of Historic Sites and Buildings Theme Study* was prepared by the NPS in 1964-65. This theme study identifies five national park units that reflect this theme, including Independence National Historical Park (Pennsylvania), George Washington Carver National Monument (Missouri), Edison National Historic Site (New Jersey), Harpers Ferry National Historical Park (West Virginia), and Wright Brothers National Memorial (North Carolina). Although these sites represent the broader theme of science, none reflects the stories of space exploration and related scientific and technological advances.

National Historic Landmarks (NHLs)

Of the resources identified in the *Man In Space Theme Study*, 24 were recommended for national historic landmark designation because they represent the best and most important surviving examples of the technologies associated with the subject theme. The national historic landmark database reflects that there are 23 designated national historic landmarks that reflect the theme of space exploration, in addition to the two JPL sites mentioned above.

Many of these national historic landmarks are located within NASA or U.S. Department of Defense restricted facilities that do not allow public access. Many of the facilities that do have some public access do not permit direct access to the national historic landmark designated facilities. However, NASA has fourteen visitor centers or facilities that partner to interpret NASA-related themes across the U.S. many of which are co-located with the NASA facilities where these national historic landmarks are located. Most of the visitor centers offer tours of the NASA facilities while providing visitor services, interpretation, and attractions at the visitor centers. Examples include the Lyndon B. Johnson Space Center in Houston, Texas and the Cape Canaveral Air Force Station national historic landmark in Cocoa, Florida. In California, visitors can learn about the Unitary Plan Wind Tunnel national historic landmark (Moffett Field, Mountain View, California) at the Ames Research Center's Visitor Center.

Comparably Managed Areas

Sites associated with the topic of "Man in Space" that are nationally significant and managed for protection and public enjoyment have been designated as national historic landmarks, with the exception of four resources. The Rocket Engine Test Facility (Lewis Research Center) has been demolished, and three spacecraft, including the Mercury Spacecraft Friendship 7 Spacecraft (aka Mercury-Atlas 6), Gemini 4 Spacecraft, and Apollo 11 Command Module were not



The Space Flight Operations Center NHL at the Jet Propulsion Laboratory is still used today. An observation room provides an opportunity for visitors to view the facility without disrupting operations. Photo: Courtesy of NASA.

Given the security requirements for JPL's current operations, the facility has limited public access with public visitation limited to open house events, (typically once a year) and tours for groups and individuals on an advance reservation basis.

designated, but are preserved and exhibited at the Smithsonian's National Air and Spacecraft Museum. These three resources are managed for preservation and public enjoyment, but they are substantially different from resources at JPL which provides unique opportunities to learn about advancements in deep space exploration.

Conclusion: Expanding Science and Technology

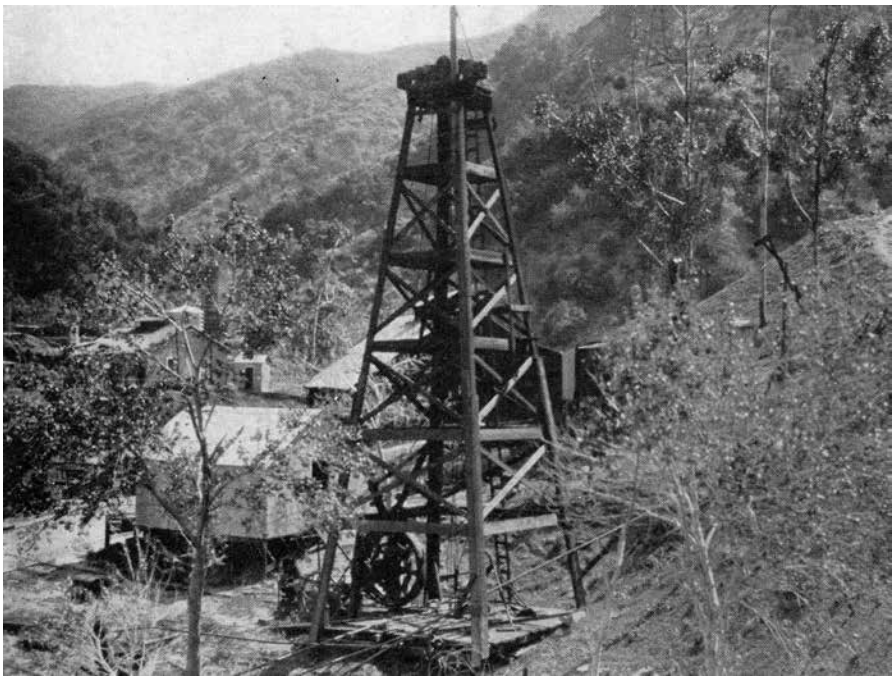
The resources at JPL represent the theme, Expanding Science and Technology, and the topic, of space exploration. Although not represented in the national park system, a number of national historic landmarks that reflect similar themes are managed for resource protection while providing for some public enjoyment.

The national historic landmarks at JPL represent two topics identified in the *Man in Space Theme Study,* "Unmanned Spacecraft Test Facilities," and "Mission Control Centers." At JPL, the Twenty-five Foot Space Simulator NHL represents the latter topic. The Spacecraft Magnetic Test Facility NHL is the only other comparable nationally significant resource that represents this topic. Although they both are unmanned spacecraft test facilities, their history, function and design are different. At JPL, the Space Flight Operations Facility represents the topic "Mission Control Centers." The only other nationally significant resource representing this topic is the Apollo Mission Control Center National Historic Landmark located in Houston, Texas. Given the primary mission of JPL is research and development, the Twenty-five Foot Space Simulator and Space Flight Operations Facility are not comparably managed for preservation and public enjoyment. As the themes represented by these sites are not represented by any national park units, these national historic landmarks are considered suitable additions to the national park system.

Developing the American Economy

The theme developing the American Economy reflects the ways Americans have worked and materially sustained themselves by the processes of extraction, agriculture, production, distribution, and consumption of goods and services. Two topics under this theme that is represented by a nationally significant resource within the study area include:

- Transportation and Communication: Juan Bautista de Anza National Historic Trail, Old Spanish National Historic Trail, Route 66, Butterfield Overland Trail
- Extraction and Production: Well No. 4, Pico Canyon Oil Field (Pico Well No. 4)



The newspaper caption to this 1931 photo of Well No. 4, Pico Canyon reads, "*At the head of Pico Canyon, in the old Newhall oil field, stands this diminutive derrick known as the California Star Oil Works Company No. 4 well. It has faithfully produced for 54 years and is the oldest active well in California*." Photo: Herald-Examiner Collection/Los Angeles Public Library.

Transportation and Communication

Similar to the subthemes under "Peopling Places," the Juan Bautista de Anza and Old Spanish national historic trails represent the theme, "Developing the American Economy" in the national park system. The Anza Trail is represented in both SMMNRA and other portions of the study area, while the Old Spanish National Historic Trail occurs in the study area outside of SMMNRA. Route 66 has also been determined to be nationally significant and as previously mentioned, the NPS designated Route 66 Corridor Program seeks to protect the nationally significant resources associated with the corridor.

The Butterfield Overland Trail, a mail route that began from two eastern termini on the Mississippi River at St. Louis, Missouri, and Memphis, Tennessee, and followed a southerly course before heading north through California to its western terminus in San Francisco, was recently determined nationally significant for its role in tying California, and various western territories, more closely to the long-established portions of the U.S. east of the Mississippi River. Established in 1857, the stagecoach route lasted three years before more efficient forms of communication and more direct routes farther north replaced it.

Extraction and Production

Pico Well No. 4 was the first major producer of southern California oil. Oil had a significant effect on the regional economy and shifted the population and political power within California from north to south. In the 1870s through early 1880s, Pico Canyon was the principal oil region of California. There the pioneers of the industry received both training and substance, which enabled them to make California the second oil producing state after Pennsylvania in the nation in the first two decades of the 20th Century (NPS 1966).

In 1966, the NPS prepared the *Commerce and Industry Theme Study* to identify and assess historic sites associated with this theme. Within that study, the theme "Business-Subtheme A: Extractive and Mining Industries" identified a number of significant sites representing these stories, including Pico Well No. 4., which was listed under the heading of "Petroleum and Related Resources." That same year, Pico Well No. 4 was designated a national historic landmark (NPS 1966).

National Park Service Units

In the *Commerce and Industry Theme Study* (NPS 1966), one NPS unit was identified as representing the subtheme of "Extractive and Mining Industries", under the heading of "Iron and Ferro Alloys." Saugus Iron Works National Historic Site in Saugus, Massachusetts is a reconstruction of the first successful, integrated iron works in the New World. In 1968, the site was added to the national park system because it is considered the birthplace of the iron and steel industry in Colonial America, initiating and sustaining an advanced iron making technology in the New World.

No national park unit was identified in the 1966 study as representing the topic of "Petroleum and Related Resources".

National Historic Landmarks (NHLs)

The 1966 study identified nine nationally significant sites that relate to the topic of "Petroleum and Related Resources", including Pico Well No. 4. In addition to Pico Well No. 4, six of these sites are designated national historic landmarks, including:

- Drake Oil Well, PA
- Norman No. 1 Oil Well, KS

Including Pico Well No. 4, there are four NHLs that represent the discovery and successful extraction of oil. All four of these NHLs are managed for resource protection and public enjoyment.



Mentryville, the 1880s oil boomtown associated with the site of Well No. 4, Pico Canyon, is currently managed by the MRCA as part of the Santa Clarita Woodlands Park. NPS photo.

- Lucas Gusher, TX
- John D Rockefeller Estate (Kykuit), NY
- E.W. Marland Mansion, OK
- Harry F Sinclair House, NY

Including Pico Well No. 4, there are four NHLs that represent the discovery and successful extraction of oil. Each of these four sites represents a regional component of the broader national story of commercial oil development, and its broad impacts on U.S. history. Drake Oil Well in Pennsylvania conveys the story of the first discovery and commercial extraction of oil in the U.S., while Norman No. 1 Oil Well represents the opening of the oil industry in the mid-continent region and its effects on the national economy and oil industry. The Lucas Gusher, Spindletop Oil Field adds a chapter to this narrative by representing the discovery and commercial extraction of oil in the Texas Gulf coastal plain and Louisiana, and the modern era of the oil industry. Like these three sites, Pico Well No. 4 contributes the west coast chapter of the story of oil discovery and successful commercial development. All four of these NHLs are managed for resource protection and public enjoyment.

The three other national historic landmark sites that represent the petroleum story of the nation's "Commerce and Industry" cultural resource theme illustrate key figures in the development of the oil industry. The residences of John D. Rockefeller, E.W. Marland, and Harry F. Sinclair contribute to this broader theme, but by focusing on industry leaders, rather than the sites and associated resources directly relating to oil extraction and development. The three sites offer varying degrees of public access and interpretation.

Comparably Managed Areas

The *Commerce and Industry Theme Study* (NPS 1966) did not identify sites that represent the topic of "Petroleum and Related Resources" that are comparably managed for resource protection and public enjoyment. There are museums that interpret this topic, including the California Oil Museum in Santa Paula, California just north of the study area, but the site itself is not a nationally significant resource comparable to the national historic landmarks described above.

Conclusion: Developing the American Economy

The subtheme "Transportation and Communication" is represented in the study area by three resources that are part of the national park system as two national historic trails (Juan Bautista de Anza and Old Spanish national historic trails) and the federally designated Route 66 Corridor Program. Other study area sites listed in the National Register of Historic Places, determined eligible for listing in the national register, or designated California State Historic Landmarks represent this subtheme but are not suitable as new national park additions at this time because they have not yet been found to meet national historic landmark criteria.

No national park unit represents the petroleum story of the nation's "Commerce and Industry" cultural resource theme. Of the six sites related to the petroleum story (not including Pico Well No. 4), three focus on the discovery and extraction of oil in other regions of the country, and three illustrate the stories of key figures in the development of the oil industry. Pico Well No. 4 is the only site representing the discovery and commercial development of oil on the west coast.

The study area includes several national park system related sites and programs...many of the resources in the remainder of the study area could expand and enhance the significance of these NPS-related designated sites and resources if protected in the study area. In some cases, the remainder of the study area contains resources not represented in the national park system.

Pico Well No. 4 is currently located in Pico Canyon, a park managed by the Mountains Recreation and Conservation Authority (MRCA), a joint-powers authority, with the City of Santa Clarita as a joint-powers partner. The natural landscape surrounding Pico Well No. 4 provides site context that is similar to the historic landscape during the period of significance, providing a rare opportunity for visitors to experience these resources in an environment similar to that of the 1880s. Pico Well No. 4's operations provide for public enjoyment opportunities under its current MRCA management. The MRCA's primary mission is conservation of open space for recreation and natural resource conservation, and as such, opportunities exist to provide greater protection and interpretation of the national significance of this site's cultural resources. The themes represented by Pico Well No. 4 are not represented by any national park units and the site is not comparably managed.

Evaluation of Suitability Factors

Adequacy of representation is determined on a case-by-case basis by comparing the potential addition to the national park system to other comparably managed areas representing the same resource type, while considering differences or similarities in the character, quality, quantity, or combination of resource values. The comparative analysis also addresses rarity of the resources, interpretive and educational potential, and similar resources already protected in the national park system or in other public or private ownership. The comparison results in a determination of whether the proposed new area would expand, enhance, or duplicate resource protection or visitor use opportunities found in other comparably managed areas.

The study area includes several national park system related sites and programs, including SMMNRA, two national historic trails, and a federally designated NPS program for Route 66, all of which represent significant resources and associated natural and cultural resource themes. As further explored in *Chapter 4: Boundary Adjustment Evaluation*, many of the resources in the remainder of the study area could expand and enhance the significance of these NPS-related designated sites and resources if protected in the study area. In some cases, the remainder of the study area contains resources not represented in the national park system. A summary of suitability findings based on geographic areas of the Rim of the Valley Corridor is provided along with a summary of resources that are further evaluated for boundary expansion potential (*Table 3-3: Summary of Findings - Suitability*).

Areas Determined Suitable for Inclusion in the National Park System

Santa Susana Mountains

The Santa Susana Mountains contain a combination of nationally significant natural and cultural resources that are not currently represented in the national park system. These resources combined with those that expand and enhance the resource themes already represented in SMMNRA make this area suitable as a new national park unit.

The north side of the Santa Susana Mountains is characterized by a convergence of montane and desert influences that create rare and unusual plant communities, including some ancient relict plant communities (e.g. bigcone Douglas-fir and canyon live oak) representing the theme "Land Ecosystems – Dry Coniferous Forest". The area also includes plant communities at their northern or southernmost geographic limits (e.g. valley oak savanna). Culturally, the Santa Susana Mountains were the location for the birth of the oil industry in southern California. Pico Well No. 4, representing the theme "Developing the American Economy", was the first commercially successful oil well on the west coast of the U.S., and the protected natural landscape surrounding Pico Well No. 4 provides a rare opportunity for visitors to experience this resource in an environment similar to that of the 1880s. Pico Well No. 4, while located in a park open for public access and recreation, is currently not comparably managed for cultural resource protection and interpretation.

Several nationally significant resources in the Santa Susana Mountains reflect themes already represented in SMMNRA but which would expand the representation of these themes in the national park system. The diversity of rock formations and mountain ranges illustrate and interpret the story of the Transverse Ranges. The Chatsworth, Towsley, and Las Virgenes formations in the study area expand the fossil resource themes represented in SMMNRA. This area would enhance the quantity, quality, and diversity of grassland and chaparral

Table 3-3: Summary of Findings - Suitability

Sub-Geographic Area	Suitability Finding	Resources and Related Themes that Would Expand and Enhance Resource Protection/Visitor Use Opportunities in SMMNRA and National Park System*
Santa Susana Mountains	Yes. A combination of rare and unusual plant communities (e.g. bigcone Douglas-fir and canyon live oak) representing the theme Land Ecosystems – Dry Coniferous Forest; plant communities at their northern or southernmost geographic limits (e.g. valley oak savanna); Pico Well No. 4 NHL representing the theme Developing the American Economy; Butterfield Overland Trail representing the theme Developing the American Economy (suitability is currently under evaluation in a separate special resource study).	Mountain systems (Transverse Range), fossils, land ecosystems (grassland, chaparral and woodland vegetation), stream systems (riparian vegetation), Ethnic Homelands (archeological sites)
Upper Santa Clara River	Yes. Alluvial fan sage scrub, representing the theme Aquatic Ecosystems.	Land ecosystems (chaparral, dry coniferous forest), stream systems (riparian vegetation).
San Gabriel Mountains and Foothills	Yes. Resources related to geologic processes, a wide diversity of rare habitats, including alluvial fan sage scrub, located in close proximity given the dramatic changes in topography, and technological advances in the areas of astronomy, chaparral ecosystems and watersheds.	Mountain systems (Transverse Range/ mountain building, geologic diversity), land ecosystems (chaparral, dry coniferous forest), stream systems (riparian vegetation), Expanding Science and Technology (Mount Wilson Observatory).
Arroyo Seco	Yes. Resources relate to themes not comparably represented in the national park system, including Expressing Cultural Values (Rose Bowl NHL), and Expanding Science and Technology (the Space Flight Operations Center NHL and Twenty-five Foot Simulator NHL).	Land ecosystems (chaparral and woodland vegetation), aquatic habitat (riparian and alluvial fan sage scrub), Expressing Cultural Values (Gamble House NHL), migration from outside and within (Arroyo Seco Parkway). In addition, the area includes an unusually high quantity and density of sites listed in the National Register of Historic Places, many of which have thematic connections to the area's NHL sites.
Santa Monica Mountains (outside of current SMMNRA)*	No. Areas outside of SMMNRA primarily contain resources represented in SMMNRA.	Land ecosystems (chaparral and woodland vegetation), stream systems (riparian vegetation), architecture (Case Study House Program/ Eames House NHL). Developing the American Economy; Butterfield Overland Trail representing the theme Developing the American Economy (suitability is currently under evaluation in a separate special resource study).
Conejo Hills – Las Posas Hills*	No. The themes represented by nationally significant resources in this area are already represented in SMMNRA.	Mountain systems (Transverse Range), fossils, land ecosystems (chaparral and woodland vegetation), stream systems (riparian vegetation)
Simi Hills*	N/A for SMMNRA areas in the Simi Hills. No. The themes represented by nationally significant resources in this area are primarily represented in SMMNRA.	Mountain systems (Transverse Range), fossils, land ecosystems (grassland, chaparral and woodland vegetation), stream systems (riparian vegetation), ethnic homelands (prehistoric rock art and village sites), Cold War Era (Alfa, Bravo and Coca Test Areas)
Verdugo Mountains – San Rafael Hills*	No. The themes represented by nationally significant resources in this area are already represented in SMMNRA.	Mountain systems (Transverse Range), land ecosystems (chaparral and woodland vegetation), aquatic ecosystems (riparian vegetation)
Los Angeles River*	No. The themes represented by nationally significant resources in this area are already represented in SMMNRA.	Transforming the environment (water conveyance and flood protection systems, protecting and preserving the environment), Anza NHT (recreation route along the river), Old Spanish NHT (El Pueblo de Los Angeles Historical Monument)

**Note: These are further explored in Chapter 4: Boundary Adjustment Evaluation.*

related vegetation communities represented at SMMNRA. The numerous canyons in the Santa Susana Mountains also contain sensitive riparian communities, such as black cottonwood forest and Fremont cottonwood forest. The area's broad range of imperiled vegetation communities also supports several sensitive plant and animal species, some of which are federally listed.

The Santa Susana Mountains also include significant resources related to cultural resource themes that have the potential for future scientific discovery. As described in *Chapter 2: Resource Description,* the Santa Susana Mountains area is largely unsurveyed for archeological resources but served as a transition zone between the territories of Chumash, Gabrieleno/Tongva, and the Tatavium. These areas have the potential for yielding archeological resources that would enhance knowledge and understanding of the relationships between these Native American groups (CSP 2005).

Upper Santa Clara River

As identified in the *San Gabriel Study* (NPS 2013f), the Upper Santa Clara River area has been determined to be a suitable addition to the national park system. In this study, the NPS determined that no national park unit in the South Pacific Border natural region contains the alluvial fan vegetation unique to the Transverse and Peninsular Ranges of southern California, and that the Upper Santa Clara River area, along with the Tujunga Wash area of the San Gabriel Foothills, are two of three alluvial fan sage scrub sites that possess the greatest species diversity.

In addition to being suitable based on resources related to aquatic ecosystems, the Upper Santa Clara River area contains resources that would enhance the significance of resource themes already represented in SMMNRA. The Upper Santa Clara River area contains fossiliferous formations that are not represented in SMMNRA, including the Tick Canyon and Mint Canyon formations, so addition of this area to SMMNRA would increase to the quantity and diversity of fossil species already present in SMMNRA. This area also includes more sensitive plant community types (at least seventeen), including riparian communities and associated sensitive plant and animals species, than any other portion of the study area (LADRP 2012a).

San Gabriel Mountains and Foothills

Through the San Gabriel study process, the San Gabriel Mountains and foothills, including those portions that are within the Rim of the Valley Corridor study area, were determined to be suitable additions to the national park system. The study concluded that the overall combination of cultural and natural resource values and themes represented by the San Gabriel Mountains and foothills is not comparable to any other national park unit or comparably managed areas. Represented within these themes are unique geological features and dramatic geologic processes, a wide diversity of rare habitats, including alluvial fan sage scrub, located in close proximity given the dramatic changes in topography, and technological advances in the areas of astronomy, chaparral ecosystems and watersheds.

Arroyo Seco

The Arroyo Seco contains a combination of nationally significant natural and cultural resources that are not currently represented in the national park system. These resources combined with those that expand and enhance the resource themes already represented in SMMNRA make this area suitable as a new national park unit.

Significant resources in this geographic area include the Gamble House NHL, representing the theme "Expressing Cultural Values – Architecture;" the Rose Bowl NHL, representing the theme "Expressing Cultural Values - Popular and Traditional Culture;" and the Twenty-five Foot Space Simulator NHL and the Space Flight Operations Facility NHL, both representing the themes "Expanding Science and Technology" and "Man in Space." Although these resource themes are not represented in the national park system, the Gamble House NHL is comparably managed for resource protection and public enjoyment.

This geographic area also reflects an unusually high quantity and density of sites listed in the National Register of Historic Places, many of which have thematic connections to the area's NHL sites. Some cultural resources, such as the Arroyo Seco Parkway and flood protection features may also be nationally significant. The Arroyo Seco corridor also includes a segment of Route 66. In addition, the Arroyo Seco area contains small remnants of alluvial fan sage scrub, riparian habitat, walnut woodland,

The NPS has determined, based on the character, quantity and quality of resource values in the study area, that there are nationally significant resources in the Rim of the Valley Corridor study area suitable for inclusion in the national park system, including those analyzed and determined suitable as part of the *San Gabriel Study* (NPS 2013f).

and chaparral-related resources which would expand and enhance to the natural resource themes reflected in SMMNRA.

Other Areas (Potential for Boundary Adjustment to SMMNRA)

The Santa Monica Mountains and Simi Hills (outside SMMNRA), Conejo Mountain-Las Posas Hills, Los Angeles River and Verdugo Mountain-San Rafael Hills areas primarily contain resources already represented in SMMNRA. These resources would expand and enhance resource protection and visitor use opportunities currently represented in SMMNRA. The potential for adding these areas to SMMNRA through a boundary adjustment is explored in *Chapter 4: Boundary Adjustment Evaluation*.

Overall Conclusions: Suitability

The NPS has determined, based on the character, quantity and quality of resource values in the study area, that there are nationally significant resources in the Rim of the Valley Corridor study area suitable for inclusion in the national park system, including those analyzed and determined suitable as part of the *San Gabriel Study* (NPS 2013f).

The *San Gabriel Study* concluded that the overall combination of cultural and natural resource values and themes represented by the San Gabriel Mountains is not comparable to any other national park unit or comparably managed areas. Represented within these themes are unique geological features and dramatic geologic processes, a wide diversity of rare habitats located in close proximity given the dramatic changes in topography, and technological advances in the areas of astronomy, chaparral ecosystems and watersheds. These resources are located within the San Gabriel Mountains, San Gabriel foothills, and Upper Santa Clara River portions of the Rim of the Valley Corridor study area.

Within the remainder of the study area outside of SMMNRA, the Santa Susana Mountains have a combination of resources that are outstanding representations of natural and cultural resources not represented in the national park system or comparably managed areas. The Santa Susana Mountains include habitat types representing the theme "Land Ecosystems" that are not found in other national park units or comparably managed sites. The convergence of montane and desert influences have created rare and unusual plant communities, including ancient relic examples of bigcone Douglas-fir and canyon live oak. The Santa Susana Mountains also serve as the northern or southernmost geographic limits for several other plant communities such as valley oak savanna. These characteristics make the Santa Susana Mountains unique for understanding the distribution and evolution of flora in the context of the significant California Floristic Province and rare Mediterranean-type ecosystem. Culturally, the Santa Susana Mountains were the location for the birth of the oil industry in the western U.S. Pico Well No. 4, representing the theme "Developing the American Economy", was the first commercially successful oil well on the west coast of the U.S., and the protected natural landscape surrounding Pico Well No. 4 provides a rare opportunity for visitors to experience this resource in an environment similar to that of the 1880s.

At the eastern end of the study area, the Arroyo Seco contains a range of cultural resources that are an outstanding representation of themes not represented in the national park system or comparably managed areas. These resources represent the theme "Expressing Cultural Values", as exemplified by the Rose Bowl National Historic Landmark, and the theme "Expanding Science and Technology" (specifically space exploration) as embodied by the Space Flight Operations Center National Historic Landmark and Twenty-five Foot Simulator National Historic Landmark, both located at the Jet Propulsion Laboratory. In addition to reflecting themes not represented in the national park system, these resources were found to not be comparably managed for resource protection and public enjoyment.

The Santa Monica Mountains and Simi Hills (outside SMMNRA), Conejo Mountain-Las Posas Hills, Los Angeles River and Verdugo Mountains-San Rafael Hills areas contain resources of national significance that would expand and enhance resource protection and visitor use opportunities currently represented in SMMNRA. The potential for adding these areas to SMMNRA through a boundary adjustment is explored in *Chapter 4: Boundary Adjustment Evaluation*.

To be feasible as a new unit of the national park system, an area must be: (1) of sufficient size and appropriate configuration to ensure sustainable resource protection and visitor enjoyment (taking into account current and potential impacts from sources beyond proposed park boundaries); and (2) capable of efficient administration by the National Park Service at a reasonable cost.

The majority of study area lands (84%) are undeveloped/unimproved lands, many of which are protected for recreation and/or conservation purposes (approx. 344,000 acres or 52%).

Feasibility

To be feasible as a new unit of the national park system, an area must be: (1) of sufficient size and appropriate configuration to ensure sustainable resource protection and visitor enjoyment (taking into account current and potential impacts from sources beyond proposed park boundaries); and (2) capable of efficient administration by the National Park Service (NPS) at a reasonable cost. Only those resources determined both nationally significant and suitable (containing a cultural or natural resource type not already represented in the national park system or comparably protected by another entity) are eligible for protection as a new park unit.

In evaluating feasibility for a new national park unit the NPS considers a variety of factors for a study area including:

- Land use, current and potential site uses, ownership patterns, planning and zoning
- Access and public enjoyment potential
- Boundary size and configuration
- Existing resource degradation and threats to resources
- Social and economic impacts
- Costs associated with operation, acquisition, development, and restoration
- Public interest and support

This feasibility evaluation also considers the ability of the NPS to undertake new management responsibilities based on current and projected availability of funding and personnel. An overall evaluation of feasibility is made following analysis of all the criteria. Sometimes evaluations identify concerns or conditions, rather than simply reaching a yes or no conclusion. For example, some new areas may be feasible additions to the national park system only if landowners are willing to sell, or the boundary encompasses specific areas necessary for visitor access, or if state or local governments are willing to provide assurances that adjacent land uses will remain compatible with the study area's resources and values (NPS 2006a).

Geographic Scope

Because the study area includes an existing national park unit, this feasibility analysis focuses on the portions of the study area outside of the existing SMMNRA boundary. In addition, the feasibility analysis incorporates the findings from the *San Gabriel Mountains and Watershed Special Resource Study* (*San Gabriel Study*)(NPS 2013f) where that study overlaps with the Rim of the Valley Corridor study area (primarily in the San Gabriel Mountains and the Upper Santa Clara River area).

Evaluation of Feasibility Factors

Land Use, Ownership and Management, Planning and Zoning

Land Use

The study area encompasses a wide range of land uses including agricultural lands, dense urban areas, residential communities, and vast open spaces and public parklands (*Table 3-4: Study Area Land Use*). Study area land uses, ownership, and management are similar to the current mix of land uses that occur in SMMNRA, primarily open space and vacant land (over 50% in public ownership) with some areas of residential, commercial, and industrial/infrastructure development. The majority of study area lands (84%) are undeveloped/unimproved lands, many of which are protected for recreation and/or conservation purposes (approx. 344,000 acres or 52%). Developed lands comprise 13% or about 84,000 acres and include residential areas, commercial and industrial areas, and land used for infrastructure (transportation, communication, and utilities). The remaining 2%, or approximately 15,000 acres, is primarily used for agriculture.

Within the subgeographic areas of the study area, land use composition varies (*Figure 3-3: Land Use*). Developed areas such as commercial, industrial, and residential lands are primarily located in the eastern Santa Monica Mountains and the Los Angeles River and Arroyo Seco corridors. Agriculture is the dominant land use in the western portion of the study area, primarily in the Conejo Hills-Las Posas Hills area.

Land Use

Rim of the Valley Corridor Special Resource Study

National Park Service
U.S. Department of the Interior

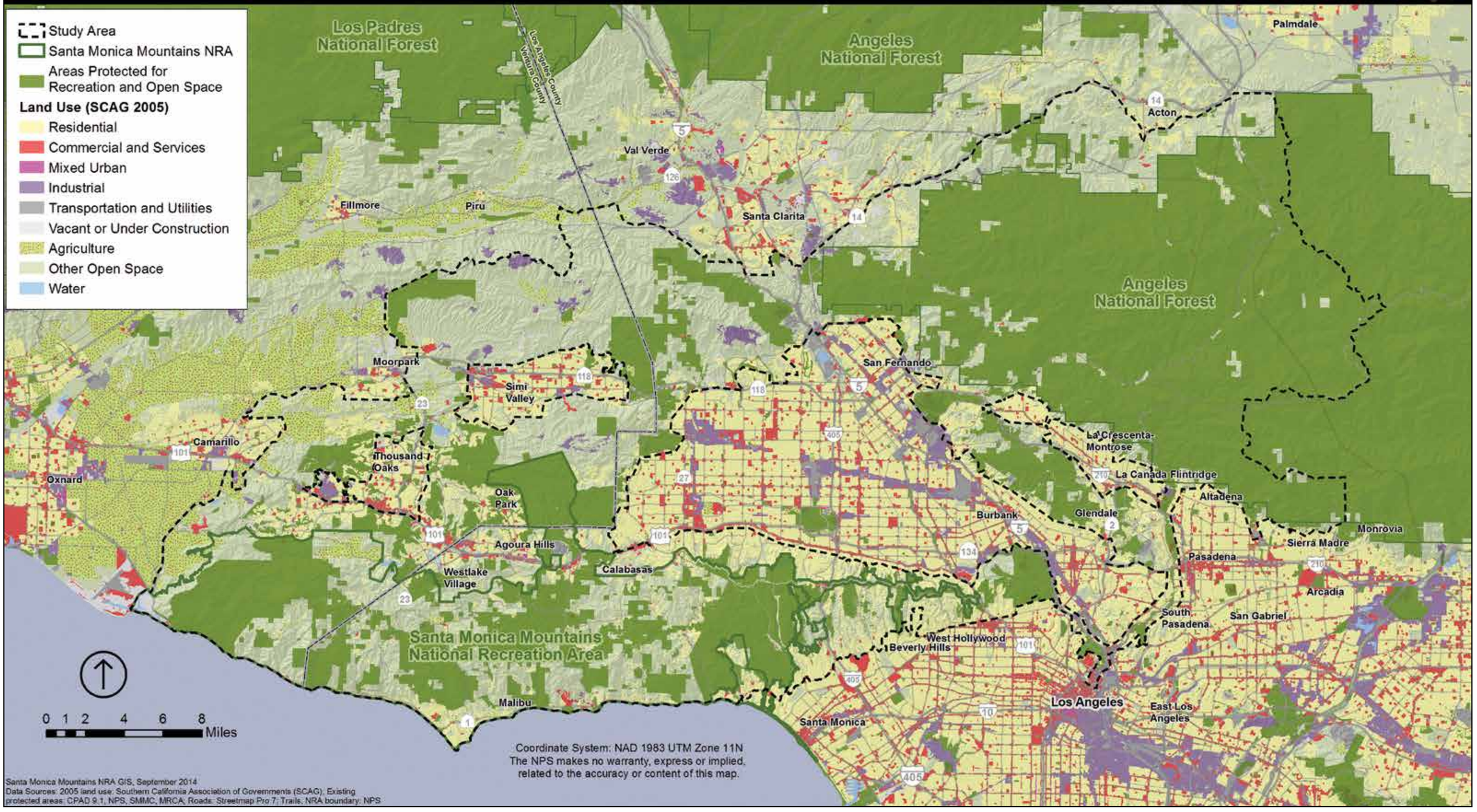


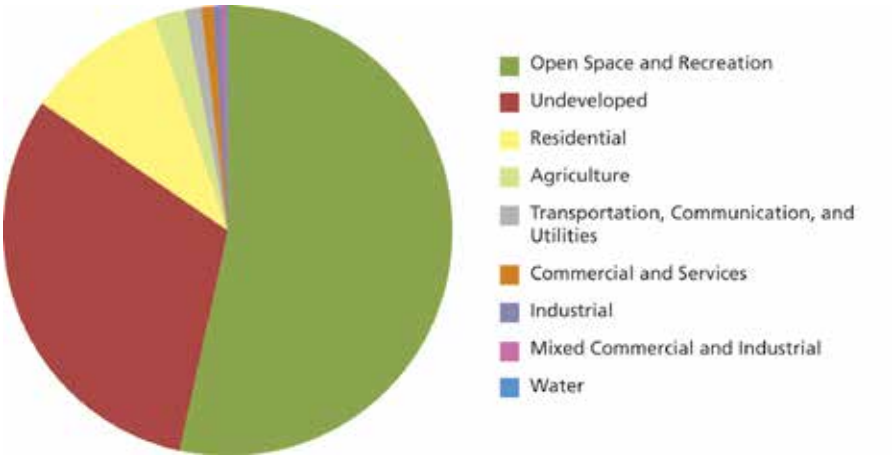
Figure 3-3: Land Use

Table 3-4: Study Area Land Use

Land Use	Approximate Acreage	%Study Area
Open Space and Recreation	344,703	53%
Undeveloped	200,661	31%
Residential	65,268	10%
Agriculture	14,721	2.3%
Transportation, Communication, and Utilities	7,557	1.2%
Commercial and Services	5,494	0.9%
Industrial	3,992	0.6%
Mixed Commercial and Industrial	1,934	0.3%
Water	662	0.1%
Total	645,000	100%

Sources: California Protected Area Database v. 1.9 (2013) (for recreation and open space). All other land use classifications are from the Southern California Association of Governments. Land Use Data (2005)

Figure 3-4: Study Area Land Use



Open Space and Recreation

The primary land use within the study area includes lands protected for open space, recreation, or conservation. These lands comprise approximately 53% of the study area. As decribed in previous sections, the study area includes three federally-protected areas, the Angeles National Forest and San Gabriel Mountains National Monument, both managed by the U.S. Forest Service, and Santa Monica Mountains National Recreation Area (SMMNRA). SMMNRA, protected by a variety of land management agencies including the NPS, comprises 25% of the study area. Another one-third of the study area is managed by the U.S. Forest Service. As described in the "Recreational Resources" section in *Chapter 2: Resource Description*, a number of local, regional and state agencies manage open space outside of these two federally-protected areas. Existing management efforts and authorities are described in the next section.

Undeveloped Open Space/Vacant

Approximately 30% of the study area is undeveloped or vacant lands that are not expressly managed for recreation or conservation purposes. Such lands are largely privately owned. The Santa Susana Mountains (82% vacant) and Upper Santa Clara River (83% vacant) have the highest percentages of undeveloped open space or vacant lands.

Residential

Approximately 10% of the study area has been developed for residential use. The highest densities of residential development occur in the Verdugo Mountains (26%) and along the highly urbanized Arroyo Seco corridor where almost 50% of the lands are residential. For most of the other subgeographic areas, residential land uses comprise between 10-16% of the land area. Such residential areas are typically concentrated around the urbanized valleys. There is relatively little residential development in the San Gabriel Mountains and Santa Susana Mountains.

Commerical and Industrial Uses

Commerical uses range from downtown commercial districts in urban corridors along the Arroyo Seco and Los Angeles River, to pockets of retail, office space, and other commercial services located throughout the study area. A wide range of industrial uses is also present in the more urbanized areas. These uses comprise less than 1% of the overall study area. Within the Santa Susana Mountains there are a number of active oil wells and a large natural gas storage area. Some gravel mining occurs within the Upper Santa Clara River area at the base of the San Gabriel Mountains.

Infrastructure and Utilities

Infrastructure includes roads, landfills, water conveyance and flood control structures, dams, communications facilities, utilities, and transportation corridors, all of which are necessary to support a large metropolitan area. The hillsides and mountains within the study area surround densely developed urban and suburban areas. These areas require extensive public infrastructure for water supply, flood protection, and sanitation facilities such as landfills. These uses comprise a little over 1% of the study area lands.

State agencies have expressed interest in the opportunity to expand the current SMMNRA cooperative management agreement to their lands in the Rim of the Valley Corridor area citing opportunities to increase operational efficiency in those open space and recreation areas.

Agencies that manage land cooperatively with NPS in SMMNRA also manage thousands of acres of open space and recreation areas in the Rim of the Valley Corridor study areas beyond SMMNRA.

Ownership and Management

Ownership

More than half of the lands in the study area are in some form of public ownership or privately protected status (53%), while the other half are in private ownership (47%). Public ownership is greatest in San Gabriel Mountains (97%), Santa Monica Mountains (45%), and the Verdugo Mountains-San Rafael Hills (44%). The Los Angeles River and Simi Hills areas also have over 40% of the lands protected for conservation and/or recreational purposes. Areas with the highest percentage of private unprotected lands include the Upper Santa Clara River, the Conejo Hills-Las Posas Hills area, and the Santa Susana Mountains (*Table 3-5: Land Ownership/Protected Lands*). For each of these areas much of the privately owned land is undeveloped or vacant and would therefore have the potential for conversion to other land uses subject to local land use regulations. There are also opportunities to conserve these large areas of open space through a variety land management approaches including direct land acquisition or cooperative management through public and private partnerships.

The largest block of open space within the study area is located in the San Gabriel Mountains, managed by the U.S. Forest Service as the Angeles National Forest and the newly-designated San Gabriel Mountains National Monument (180,000 acres). These lands are currently managed for multiple uses, including for public recreation, utility corridors and watershed management, with recreation as the primary use. Consistent with the findings of the recently completed *San Gabriel Study* (NPS 2013f), the NPS determined that continued U.S. Forest Service management would be necessary and desirable given the size and scale of the Angeles National Forest, including those portions now included in the new San Gabriel Mountains National Monument, the complexity of land uses, and NPS' inability to take on new management responsibilities and costs of that magnitude. The annual operating budget for the Angeles National Forest, including those portions now included in the new San Gabriel Mountains National Monument, is over $30 million annually. Therefore, the U.S. Forest Service managed areas of the San Gabriel Mountains would not be considered feasible for inclusion in a new national park unit or addition to SMMNRA. The NPS could pursue cooperative management and partnership opportunities with the U.S. Forest Service, without NPS designation, using existing authorities that allow for interagency operational efficiency in attaining shared goals and missions.

Agencies that manage land cooperatively with NPS in SMMNRA also manage thousands of acres of open space and recreation areas in the Rim of the Valley Corridor study areas beyond SMMNRA. California State Parks, the Santa Monica Mountains Conservancy, and the Mountains Recreation and Conservation Authority (MRCA) manage approximately 55,000 acres of land in SMMNRA through cooperative agreements with the NPS. Outside of SMMNRA, they manage another 20,000 acres of parks and open spaces. These lands are located in the Simi Hills, Santa Susana Mountains, the Los Angeles River corridor, the eastern Santa Monica Mountains, the Verdugo Mountains-San Rafael Hills, the Upper Santa Clara River area, and the San Gabriel Mountain foothills. These state agencies have expressed interest in the opportunity to expand the current SMMNRA cooperative management agreement to their lands in the Rim of the Valley Corridor area citing opportunities to increase operational efficiency in those open space and recreation areas.

Management

The following section describes the complex mix of current agency, local government, non-profit, and private entities that manage land and provide public enjoyment opportunities in the study area.

National Park Service

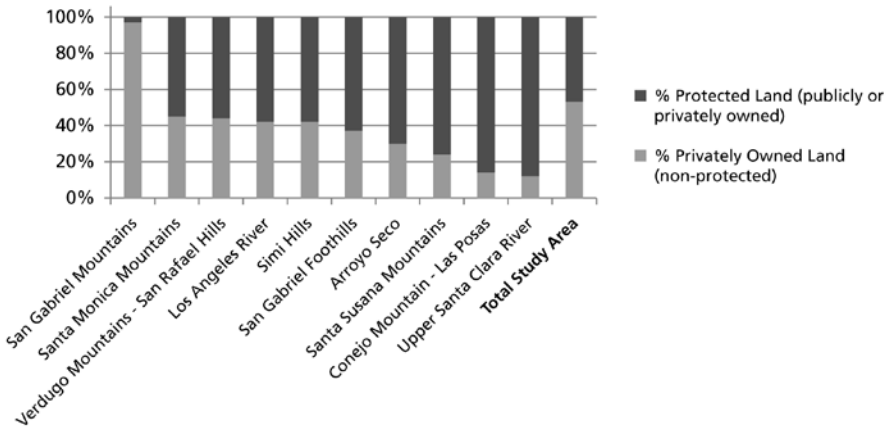
The National Park Services plays a number of roles in the management of areas in with the study area. The NPS manages SMMNRA cooperatively with many state, local park agencies with non-profit organizations and private landowners to protect resources and provide public enjoyment opportunities. Roughly 80,000 acres of the land within the 153,250-acre SMMNRA are preserved for resource protection and/or public enjoyment. Although an NPS boundary encircles the whole SMMNRA, the NPS currently has direct responsibility for only 15% of the land within SMMNRA (23,300 acres).

Table 3-5: Land Ownership/Protected Lands

Rim of the Valley Corridor Sub-Geographic Area	% Protected Lands (Public or Private Ownership)	% Private Ownership (Non-Protected)
San Gabriel Mountains	97%	3%
Santa Monica Mountains	45%	55%
Verdugo Mountains-San Rafael Hills	44%	56%
Los Angeles River	42%	58%
Simi Hills	42%	58%
San Gabriel Foothills	37%	63%
Arroyo Seco	30%	70%
Santa Susana Mountains	24%	76%
Conejo Mountain-Las Posas Hills Area	14%	86%
Upper Santa Clara River	12%	88%
Total Study Area	53%	47%

Source: California Protected Area Database v1.9 (2013)

Figure 3-5: Land Ownership/Protected Lands



Although an NPS boundary encircles the whole SMMNRA, the NPS currently has direct responsibility for only 15% of the land within SMMNRA (23,300 acres).

SMMNRA is limited by the boundary in conducting management activities. Such activities in areas beyond the current national recreation area boundary are limited to projects that further SMMNRA's defined purpose. Current efforts outside the boundary include urban outreach and resource management cooperation and assistance.

The NPS manages two national historic trails (NHT), including the Juan Bautista de Anza NHT (Anza Trail) and the Old Spanish NHT, that traverse the study area. The NPS partners with local parks and recreation agencies in the area to provide interpretation on the Anza Trail, establish recreation trail routes, and mark the historic route with signs or markers. The Old Spanish National Historic Trail which ends in Los Angeles has some local interpretation at El Pueblo de Los Angeles Historical Monument which was a former site along the trail route.

The NPS also provides technical assistance to local communities and organizations through the Rivers, Trails and Conservation Assistance Program. Grants for state and local land acquisition and park recreational facility development are administered through the Land and Water Conservation Fund Program.

The NPS administers the Route 66 Corridor Program which provides cost-share grants to preserve and interpret the Route 66 corridor, and provides technical assistance to public and private entities to address Route 66 preservation needs.

The NPS is also authorized to administer grant programs to assist with a variety of historic preservation and community projects focused on heritage preservation. The NPS also administers the Japanese American Confinement Sites (JACs) grant program. Public Law a109-441 (16 USC 461) established the JACS grant program for the preservation and interpretation of U.S. confinement sites where Japanese Americans were incarcerated during World War II.

Other Federal, State and Local Land Management Agencies and Organizations

U.S. Forest Service

Established in 1892 for the primary purpose of watershed protection, the Angeles National Forest (ANF) contains 70% of Los Angeles County's open space and its primary use is for recreation (USFS 2007). On October 10, 2014, President Obama established the San Gabriel Mountains National Monument which became the eighth U.S. Forest Service national monument. The monument, which consists primarily of areas that were part of ANF, is 346,177 acres as shown in *Chapter 1: Introduction*, on page 5 (USFS 2014). In addition to recreation and water resource purposes, these U.S. Forest Service managed areas contain extensive infrastructure that serves the Los Angeles region, including power lines, water supply and flood control facilities, media communications facilities, and roads. Activities within the ANF are managed according to the *Land and Resource Management Plan* (USFS 2006) to allow sustained use and protection of a variety of forest resources. The resources and recreational areas of the San Gabriel Mountains within the study area were severely impacted by the 2009 Station Fire. The U.S. Forest Service has been working with partners

Established in 1980, SMMC has helped to preserve over 65,000 acres of parkland in the Rim of the Valley Corridor study area, developed over 100 public recreational facilities, and has provided grants to nonprofit organizations for education and interpretation (SMMC 2011).

to repair and rebuild recreational facilities such as trails and on restoration and recovery efforts. The majority of funding for the ANF is dedicated to wildfire preparedness and fuels reduction.

Bureau of Land Management (BLM)

The BLM manages almost 3,000 acres of land in the study area. These lands consist of isolated parcels scattered throughout the Soledad basin and in the eastern Santa Susana Mountains near Santa Clarita Woodlands Park. The *South Coast Resource Management Plan* (*RMP*) provides guidance for the management of the approximately 300,000 acres of BLM-administered public lands in portions of five southern California counties: San Diego, Riverside, San Bernardino, Orange, and Los Angeles. According to the 1994 *RMP*, most of the parcels in the Soledad basin area are designated for sale or exchange under the Federal Land Policy and Management Act of 1976. However, several parcels are designated for exchange with the U.S. Forest Service. Parcels in the eastern Santa Susana Mountains are recommended for protective disposal (ensures that valuable resources are managed for biodiversity values, regardless of who ultimately manages these parcels). Such parcels would be made available to a local agency prior to disposal.

The *RMP* is currently under revision and a draft was released for public review in 2012 (BLM 1994). Some alternatives explored in the BLM's draft *RMP* recommend establishing an area of critical environmental concern (ACEC) for the Upper Santa Clara River area. An ACEC is an area where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety form natural hazards. The alternatives considered in the draft plan also recommend that BLM lands containing segments of the Pacific Crest Trail would not be considered for disposal (BLM 2011).

In Ventura County, the *Bakersfield Resource Management Plan* (2013) provides guidance for parcels in the area north of the Santa Clara River and south of the Los Padres National Forest. None of these parcels are within the study area. However, some of them are within important habitat linkages between the Santa Susana and Topatopa Mountains (BLM 2013).

California State Land Conservancies

Two California state land conservancies have jurisdiction within the study area. The entire study area is within the jurisdictional authority of the Santa Monica Mountains Conservancy (SMMC). Established in 1980, SMMC has helped to preserve over 65,000 acres of parkland in the Rim of the Valley Corridor study area, developed over 100 public recreational facilities, and has provided grants to nonprofit organizations for education and interpretation (SMMC 2011). The western San Gabriel Mountains and foothills within the study area are also within the jurisdiction of the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC).

Coastal Zone Management

The California Coastal Act of 1976 (Coastal Act) includes specific policies that address issues such as shoreline public access and recreation, terrestrial and marine habitat protection, visual resources, land use, and public works. The policies of the Coastal Act constitute the statutory standards applied to planning and regulatory decisions made by the California Coastal Commission and by local governments, pursuant to the Coastal Act. The California Coastal Act established a coastal zone that varies in width from several hundred feet in highly urbanized areas up to five miles in certain rural areas. Offshore the coastal zone includes a three-mile-wide band of ocean. A large part of SMMNRA occurs within the coastal zone.

The Coastal Commission, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. Development activities generally require a coastal permit from either the Coastal Commission or the local government where a local coastal plan (LCP) has been established. Within the Santa Monica Mountains coastal zone LCP's have been established for the Ventura County coast and for the City of Malibu in Los Angeles County. The LCP for the remaining unincorporated portion of the Santa Monica Mountains in Los Angeles County is pending approval.

State of California Coastal Conservancy

The California Coastal Conservancy works with local governments, other public agencies, non-governmental organizations, and private landowners to purchase, protect, restore, and enhance coastal resources, and to provide access to the shore. The California Coastal Conservancy has contributed funding for land conservation and restoration projects in the coastal zone. Funds are currently available from the Coastal Conservancy's Southern California Wetlands Recovery Project to restore and enhance wetlands in southern California.

California State Parks

The Angeles District of the California Department of Parks and Recreation is responsible for managing state parks within SMMNRA and the study area. Within SMMNRA, California State Parks owns and manages the majority of publicly owned lands (35,850 acres). This includes large parks such as Point Mugu State Park, Leo Carrillo State Park, Malibu Creek State Park, and Topanga State Park. State beach parks include El Pescador, La Piedra, El Matador, Malibu Lagoon, Point Dume, Las Tunas, Will Rogers, and Santa Monica state beaches. Will Rogers State Historic Park is in the eastern Santa Monica Mountains.

Beyond SMMNRA, California State Parks manages parks near downtown Los Angeles, including Rio de Los Angeles State Park and Los Angeles State Historic Park. North of SMMNRA is Santa Susana State Historic Park, Los Encinos State Historic Park, and Placerita Canyon State Park (managed by the Los Angeles County Department of Parks and Recreation). With the recent establishment of Rio de Los Angeles State Park and Los Angeles State Historic Park, California State Parks has engaged urban audiences in downtown Los Angeles.

County Parks

The Los Angeles County Department of Parks and Recreation, Los Angeles County Department of Beaches and Harbors, and the Ventura County Parks Department each manage numerous parks and trail systems within the Rim of the Valley Corridor. The study area contains almost 10,000 acres of county parklands. Within the study area, Los Angeles County parks primarily consist of beaches along the Santa Monica Mountains coast such as Zuma County Beach, Westward County Beach, and Nicholas Canyon County Beach. Ventura County has regional parks in the Santa Susana Mountains, Simi Hills, and Camarillo areas including Camarillo Grove County Park, Happy Camp Canyon Regional Park (managed by the MRCA), Tapo Canyon Regional Park, and Oakbrook Regional Park.

Special Districts

Recreation and park districts are independent from local governments and formed to provide park and recreational opportunities. Three districts operate within the study area, the Rancho Simi, Pleasant Valley, and Conejo recreation and park districts. The Rancho Simi Recreation and Park District provides parks and recreation activities in the Simi Valley area. The park district manages nearly 3,000 acres of open space within the study area for hiking, biking, horseback riding, and wildlife preservation. The Pleasant Valley Recreation and Park District oversees park and recreational opportunities for the City of Camarillo and the surrounding communities, including the California State University Channel Islands campus. Conejo Recreation and Park District manages over 1,700 acres of parks and open space serving the communities of Thousand Oaks, Newbury Park, and the Ventura County portion of Westlake Village.

Joint Powers Authorities

A Joint Powers Authority (JPA) is an entity permitted under state law, whereby two or more public authorities (e.g. local government, or utility or transport districts) can operate collectively. Joint powers agencies have been successful in leveraging funding and implementing projects which serve the purposes of each member agency. Five JPAs operate within the study area.

The Mountains Recreation and Conservation Authority (MRCA) is a partnership between the Santa Monica Mountains Conservancy and the Conejo and Rancho Simi recreation and park districts dedicated to the preservation of open space and parkland, watersheds, trails, and wildlife habitat. The MRCA functions as the land management arm of the SMMC and provides ranger services, fire protection, planning and natural resources expertise, and educational programs for almost 50,000 acres of public lands and parks under its or the

SMMC's ownership. Over half of this land is within the study area.

Conejo Open Space Conservation Agency (COSCA) was created in 1977 as a joint powers entity between the City of Thousand Oaks and the Conejo Recreation and Park District for the purpose of acquiring and managing natural open space within and around the Conejo Valley. COSCA manages open space and trails, primarily in the western Santa Monica Mountains and Conejo Mountain-Las Posas Hills area. Currently, COSCA owns approximately 8,200 acres of open space lands and manages an additional 4,000 acres owned by the City, the District, or the MRCA.

The COSCA-managed trail system connects to adjacent trails and open space lands of the National Park Service, California Department of Parks and Recreation, MRCA, Rancho Simi Recreation and Park District, Santa Rosa Valley and includes a segment of the recreation route for the Juan Bautista de Anza National Historic Trail.

The Desert and Mountain Conservation Authority (DMCA) is a joint powers authority area between the Antelope Valley Resource Conservation District and the SMMC that serves Antelope Valley. Established in 2006, the DMCA acquires and manages open space lands within the boundaries of the two founding agencies. The Santa Clarita Watershed and Recreation Conservation Authority is a joint powers authority between the City of Santa Clarita and the SMMC that manages park and recreation lands in the Santa Clarita area.

The Watershed Conservation Authority (WCA) is a joint powers entity of the RMC and the Los Angeles County Flood Control District. Through the WCA, the RMC and Los Angeles County conduct joint projects to provide open space, habitat restoration, and watershed improvement in the watersheds of both the San Gabriel River and the Lower Los Angeles River.

Agencies Responsible for Flood Protection and Sanitation Facilities

Regulatory and management agencies responsible for flood control and sanitation include the Los Angeles County Department of Public Works (LADPW), the U.S. Army Corps of Engineers (USACOE), and the Los Angeles County Sanitation Districts. The California Department of Transportation (Caltrans) and local public works departments of local governments are responsible for maintaining transportation corridors.

Responsible for much of the flood control and watershed management services within the study area, LADPW partners with many other agencies in its efforts to promote best management practices for activities that may affect watersheds. Within the study area specific sites that LADPW manages include Big Tujunga Dam, Pacoima Dam, Sullivan Canyon Creek and Dam, and Topanga Creek.

The Los Angeles District of the USACOE's jurisdiction includes dams, floodways, and debris basins. Within the study area, the USACOE owns and manages Lopez Reservoir and Dam on Pacoima Wash, Hansen Dam on Big Tujunga Wash, and Sepulveda Basin on the Los Angeles River. Recently the USACOE has been actively involved with Los Angeles River revitalization efforts. The USACOE Los Angeles River Ecosystem Restoration Study is an investigation to determine if there is federal interest in ecosystem restoration opportunities along the Los Angeles River within the study area. The study explores opportunities along the river from the Canoga Park area to downtown Los Angeles, approximately 32 miles.

The Sanitation Districts of Los Angeles County are responsible for managing wastewater and solid waste. The Sanitation Districts facilities within the Study include Calabasas Landfill (within SMMNRA), Mission Canyon Landfill, Scholl Canyon Landfill, La Canada Water Reclamation Plant, and the District 27 Pumping Plant (located on Pacific Coast Highway near Coastline Drive). The Sanitation Districts of Los Angeles County also owns other land in the Santa Monica Mountains intended for a landfill.

Private Land Management

Private land stewardship plays a key role in the protection of open space and related natural and cultural resources. Nationally, about 2% of private lands are formally protected (owned and managed by a non-profit conservation organization or under conservation easement). Although 2% might seem like a small number,

this total amounts to an almost 24 million acre system of protected lands, nearly as large as the entire national park system in the lower 48 states (North American Bird Conservation Initiative, U.S. Committee 2013). Private lands make up approximately 40% of undeveloped areas or open space within SMMNRA (Stoms, Jantz, and Davis 2013).

Private land stewardship efforts and opportunities take many forms including incentives from federal, state, and local government programs, technical assistance from university extension services and resource conservation districts, and easements facilitated by non-governmental organizations. In California, state farmland conservation programs provide financial incentives for owners of farms and ranch lands to preserve agricultural land uses. Within the study area 16,600 acres of land are enrolled in the Ventura County California Land Conservation Act Program. Through this program landowners enter into voluntary contracts with the county to maintain land in agricultural use for a period of 10 or 20 years. In exchange for the restriction in land use, landowners benefit from reduced property taxes. Local efforts to protect open space and farmland have also resulted in other measures to protect these lands. For example, the County of Ventura, as well as eight of the ten incorporated cities, have enacted Save Open-Space and Agricultural Resources (SOAR) initiatives to give citizens the right to choose between preserving green space or allowing development.

Non-Governmental Conservation Activities

Numerous organizations in the region work to conserve and restore lands, as well as to provide recreational opportunities. For example, the Trust for Public Land and the Mountains Restoration Trust partner with federal, state and local government agencies, and the private community to protect, preserve, and restore natural habitat in the Santa Monica Mountains. In the San Gabriel Mountains foothills, numerous land trusts work to conserve land and habitat, including the Arroyos and Foothills Conservancy, the Sierra Madre Mountain Conservancy, and the San Gabriel Mountains Regional Land Conservancy which serves as an umbrella organization for many other land trusts.

Along the Soledad Basin/ Upper Santa Clara River area, the Riverside Land Conservancy is working with federal, state, and local partners to conserve habitat linkages between the Sierra Pelona and San Gabriel Mountains. The Nature Conservancy, a national land trust, has also been working collaboratively to protect lands along the Santa Clara River. This includes partnerships with local farmers. These collaborative efforts have protected approximately one-third of the river corridor in Ventura County. More recently, The Nature Conservancy has been working on conservation efforts along the Santa Clara River in Los Angeles County.

The NPS partners with the Santa Monica Mountains Fund and the Western National Park Association. Both groups support efforts in SMMNRA. The Santa Monica Mountains Fund is the official "friends" group of SMMNRA. Established in 1988, the Santa Monica Mountains Fund supports educational and resource protection efforts for the NPS and California State Parks. The fund has raised money for publication of *Outdoors*, a comprehensive guide to visitor activities and programming in SMMNRA as well as for ongoing mountain lion research. Western National Park Association works in partnership with the NPS to advance education, interpretation, research, and community engagement to connect people to the western national park experience. Western National Park Association operates the bookstore at the King Gillette Ranch Visitor Center and has provided funding for NatureBridge, which provides field science educational opportunities for local southern California students from under-resourced local schools. The Santa Susana Mountain Park Association works to conserve lands in the Simi Hills and Santa Susana Mountains.

Other non-governmental efforts include park associations, conservation organizations, historical societies, and friends groups, such as local Audubon Society chapters. One of the area's oldest conservation organizations is the Arroyo Seco Foundation. Founded by Charles Lummis more than one hundred years ago, the Arroyo Seco Foundation works to preserve and promote the Arroyo Seco.

Given the complexity of land use and ownership within the study area, a new park unit would only be feasible using a collaborative management approach that retains with existing ownership patterns and regulatory authorities as exemplified by current SMMNRA management.

Planning and Zoning

Each of the counties, cities, and communities within and surrounding the study area have established land use plans to guide future development and conservation within their communities. Private lands are spread among 27 local jurisdictions, 22 of which are incorporated, with the remainder subject to area-specific planning and zoning regulated by Los Angeles or Ventura counties. Most of the Ventura County lands are unincorporated. The vast City of Los Angeles has planning and regulatory control for many of the areas in Los Angeles County. Jurisdiction of the City of Los Angeles within the study area includes areas downtown along the Los Angeles River, and the communities of Brentwood, Bel Air, Canoga Park, Chatsworth, Encino, Hollywood, Northridge, Reseda, Sherman Oaks, Studio City, Sylmar, Tarzana, Tujunga, Universal City, West Hills, Winnetka, and Woodland Hills.

Most incorporated cities have local park systems. For example, the City of Los Angeles would continue management of its park system which includes major recreation destinations within the study area, such as Griffith and Elysian parks. Collectively, cities manage 28,500 acres of parks and protected areas within the study area. In unincorporated areas, county and regional recreation and park districts would continue to provide such services.

Conclusion - Land Use, Ownership Patterns, Existing Management, Planning and Zoning

Land use, ownership patterns, and regulatory authorities within the study area are quite diverse. Land use ranges from large, undeveloped natural areas to dense urban corridors. Numerous agencies and organizations own and manage land within the study area including the U.S. Forest Service, Bureau of Land Management, California Department of Parks and Recreation, California state land conservancies, as well as city, regional, and county governments. The land use and ownership patterns for much of the study area are similar to the patterns which exist in SMMNRA today.

Given the complexity of land use and ownership within the study area, a new park unit would only be feasible using a collaborative management approach that retains with existing ownership patterns and regulatory authorities as exemplified by current SMMNRA management. For over 30 years SMMNRA has functioned as a collaborative effort to protect natural and cultural resources provide recreation, public access, interpretation, education, and other compatible uses within the framework of complex ownership patterns and regulatory authorities.

Given the size and scale of the Angeles National Forest and newly-designated San Gabriel Mountains National Monument, the NPS determined that continued U.S. Forest Service management would be necessary and desirable. However, collaborative management between the NPS and U.S. Forest Service could occur through cooperative management agreements.

Access and Public Enjoyment Potential

More than five million people live within, and adjacent to, the Rim of the Valley Corridor study area (*Figure 1-4: Population Density and Ethnicity* in *Chapter 1*). Millions more in the greater Los Angeles metropolitan area use the open spaces and parklands of the study area. The population of the greater Los Angeles metropolitan area is expected in increase from 18 million to 22 million by 2035. As described in the recreation description in *Chapter 2: Resource Description*, publicly accessible open space includes over 330,000 acres of federal, state, regional, and locally managed park and recreation areas. Although access to some rivers, creeks, and reservoirs is restricted for water supply and flood protection purposes, many waterways, such as the Los Angeles River, have adjacent bike trails as well as nearby parks that provide recreational opportunities. Additionally, hundreds of miles of trails are located throughout the study area including four nationally designated recreation or scenic trails, and the nearly complete 60-mile Backbone Trail that traverses the heart of the Santa Monica Mountains. Elsewhere, currently undeveloped and unprotected open space with high resource value provides the potential to further expand regional recreational opportunities for the area's growing population. Population growth and increasing visitation may require more facilities, parking areas, and established trails.

The population of the greater Los Angeles metropolitan area is expected in increase from 18 million to 22 million by 2035.... Population growth and increasing visitation may require more facilities, parking areas, and established trails.

Despite the wealth of recreational opportunities throughout the vast study area, access to these resources is uneven for local residents. Many recreational opportunities are located away from densely populated areas and are only accessible by car. Studies have found that communities of color and communities with higher levels of poverty disproportionately lack access to the recreation areas in the greater Los Angeles metropolitan area and in the Rim of the Valley Corridor study area (The City Project 2011, Trust for Public Land 2005). Public transit options to primary recreational opportunities in the San Gabriel Mountains and SMMNRA are sparse and/or non-existent for many communities. Within the U.S. Forest Service managed areas of the San Gabriel Mountains, this has created congestion and capacity issues at popular recreational destinations during busy weekends. Expanding NPS presence in the study area would provide new opportunities in more densely populated areas and reach broader and more diverse audiences.

Because bus and rail transit systems are available in the broader region, there are opportunities to coordinate and cooperate with transit agencies to address the need for public transportation to better connect communities to recreational opportunities in SMMNRA and the study area. Within the study area, the regional Metrolink rail system, managed by the Southern California Regional Rail Authority, has stops in downtown Los Angeles, the Soledad basin including Santa Clarita, and the San Fernando and Simi Valleys. Los Angeles County Metropolitan Transportation Authority (Metro) provides light rail service to portions of the study area including the downtown Los Angeles area, Hollywood, the San Fernando Valley, and the Arroyo Seco corridor. Various bus lines serve communities surrounding the study area, although few provide stops at recreational destinations within the study area.

Recently, the MRCA operated a pilot shuttle system to provide new opportunities to access park sites in SMMNRA (ParkLINK Shuttle). The system was a network of five buses used on three routes in SMMNRA which lasted from July 2005 to mid-November 2007 and ran weekends only (with some holidays). The route extended through the central SMMNRA creating a loop that traversed Las Virgenes Road/Malibu Canyon Road in the east to the Pacific Coast Highway. In the west, the route followed Kanan Dume Road to Mulholland Drive. The ParkLINK shuttle was funded by MRCA and the Alternative Transportation in Parks and Public Lands Program. The shuttles carried approximately 80 people per day rather than the 100 people per day anticipated. In 2007, the shuttle was discontinued due to funding shortfalls.

Conclusion - Access and Public Enjoyment Potential

There is considerable potential for additional public access and enjoyment within the study area. Existing opportunities for a wide variety of recreational uses are available throughout the study area and there is ample potential for future development of additional recreational opportunities and improved access where these opportunities are currently unavailable.

Boundary Size and Configuration

Beyond SMMNRA, the study area contains approximately 500,000 acres of land with a diverse array of nationally significant natural and cultural resources. Many of these significant resources are similar or related to resources that are currently protected in SMMNRA. Additionally, the study area contains wildlife corridors essential to providing long-term conservation of the study area's highly diverse ecosystems.

An acceptable boundary for a new unit of the national park system should provide for the inclusion and protection of its primary resources with sufficient surrounding area to provide a proper setting for the resources or to relate a group of resources; and sufficient land for appropriate use and development. Only resources determined both nationally significant and suitable can be considered for a new national park unit.

The regions of the study area determined both nationally significant and suitable for a new unit of the national park system are primarily located in the San Gabriel Mountains and foothills, the Upper Santa Clara River, portions of the Santa Susana Mountains, and the Arroyo Seco area. Conservation of study area lands in these areas would provide protection of nationally significant resources includ-

Long term protection of the high biodiversity associated with the San Gabriel Mountains and foothills, Santa Susana Mountains, and Upper Santa Clara River areas requires consideration of a broad boundary configuration that includes both nationally significant resources and surrounding areas sufficient to maintain connections to other large protected areas.

ing rare habitat and endemic species, diverse geologic formations, archeological resources depicting 10,000 years of human occupation, and national historic landmarks representing nationally significant architecture, science and technology, and development of the American economy.

Long term protection of the high biodiversity associated with the San Gabriel Mountains and foothills, Santa Susana Mountains, and Upper Santa Clara River areas requires consideration of a broad boundary configuration that includes both nationally significant resources and surrounding areas sufficient to maintain connections to other large protected areas. For example, although a small national historic site could be created at Pico Well No.4, this would do little for long-term protection of the wide range of significant natural resources in the Santa Susana Mountains and adjoining landscapes that reflect the area's high biodiversity (Upper Santa Clara River, and San Gabriel Mountains).

San Gabriel Mountains and Foothills

The *San Gabriel Watershed and Mountains Special Resource Study* (NPS 2013f) determined that resources within the San Gabriel Mountains (180,000) and foothills (24,000 acres), including portions of the Upper Santa Clara River watershed (36,000 acres), would be both suitable and feasible as a new national park unit if managed in partnership with existing federal, state, and local entities. The feasibility findings of the *San Gabriel Watershed and Mountains Special Resource Study* were based on continued management of the Angeles National Forest by the U.S. Forest Service (USFS) with the National Park Service as a partner in interpretation, education, and visitor use management. The study's final recommendation was for a new unit of SMMNRA along the San Gabriel River and foothills (approximately 50,000 acres) that would include partnership and technical assistance roles for the NPS throughout the San Gabriel Mountains and watershed to assist the U.S. Forest Service in the long-term protection and interpretation of the area's significant resources (*Appendix H* contains a description of the recommendations from the *San Gabriel Watershed and Mountains Special Resource Study*). Since completion of the *San Gabriel Study* (NPS 2013f), President Obama established the San Gabriel Mountains National Monument which will be managed by the U.S. Forest Service and consists primarily of areas that were part of the Angeles National Forest, as shown in *Chapter 1: Introduction*, on page 5 (USFS 2014). Consistent with these previous findings and the new national monument dedicated, the Angeles National Forest and San Gabriel Mountains National Monument need not be included in a new unit that would protect significant resources in the Santa Susana Mountains, San Gabriel Mountain foothills, and Arroyo Seco corridor.

Santa Susana Mountains

The Santa Susana Mountains contain nationally significant natural and cultural resources that are not currently represented in the national park system. For example, the north side of the Santa Monica Mountains is influenced by a convergence of montane and desert influences that create rare and unusual plant communities, including some ancient relict plant communities (e.g. bigcone Douglas-fir and canyon live oak). There are also communities at their northern or southernmost limits (e.g. valley oak savanna). Culturally, the Santa Susana Mountains were the location for the birth of the oil industry in southern California. Well No.4, Pico Canyon Oil Field National Historic Landmark, located near Newhall, was the first commercially successful oil well on the west coast of the U.S. Well No. 4. This site is located within Elsmere Canyon Park, managed by the MRCA. The MRCA manages a significant amount of land within SMMNRA and is one of several agencies that work in partnership with NPS through a cooperative management agreement.

Much of the Santa Susana Mountains is undeveloped and several large areas have been protected for conservation and recreational values. This area would be of appropriate size and configuration to protect its significant resources while providing for public enjoyment opportunities (approximately 80,000 acres).

Arroyo Seco

Portions of the Arroyo Seco corridor above the 134 Freeway contain a concentration of resources that are nationally significant and suitable (1,600 acres). These resources include the Rose Bowl NHL, representing the theme

"Expressing Cultural Values - Popular and Traditional Culture;" and the Twenty-five Foot Space Simulator NHL and the Space Flight Operations Facility NHL, both representing the themes "Expanding Science and Technology" and "Man in Space."

Wildlife Corridors

A wide body of research on regional habitat connectivity has documented the importance of maintaining undeveloped (open space) connections between the Santa Monica Mountains, the San Gabriel Mountains, the Topatopa Mountains, and Sierra Pelona. Opportunities for protecting regional wildlife habitat connecting the Santa Monica Mountains to the Santa Susana Mountains, San Gabriel Mountains and Upper Santa Clara River area would be an important consideration in a new park unit. These connections would be essential to protect the significant resources of a new national park unit in the San Gabriel foothills and Santa Susana Mountains.

The Simi Hills and Conejo Mountain-Las Posas Hills subgeographic areas contain important wildlife corridors that physically connect to the Santa Monica Mountains. If these subgeographic areas were included in the new park unit, (approximately 93,000 acres) the area would be of sufficient size for the long-term protection of key resources and for appropriate use and development of public enjoyment opportunities. It would also create a boundary that would be contiguous with SMMRNA. Given the need for contiguity with SMMNRA, and the importance of these connecting corridors to long-term protection of resources at SMMNRA a boundary adjustment to SMMRNA, as explored further in the costs section and in *Chapter 4: Boundary Adjustment Evaluation*, would allow for a more efficient/feasible management approach.

Table 3-6: Boundary Configuration – New Park Unit

Sub-Geographic Area	Justification	Appx. Acreage
Conejo Mountain-Las Posas Hills	Habitat Connectivity	39,000
San Gabriel Mountain Foothills	Primary Resource	24,000
Santa Susana Mountains	Primary Resource	80,000
Simi Hills	Habitat Connectivity	54,000
Upper Santa Clara River Area	Primary Resource	36,000
Arroyo Seco (partial)	Primary Resource	1,600
Verdugo Mountains-San Rafael Hills	Habitat and Recreational Connectivity	24,000
Total Acreage		258,600

Although resources in the Verdugo Mountains-San Rafael Hills were found not suitable given that they primarily contain resources already represented in the national park system at SMMNRA, this area would be included because it provides an important link for genetic interchange of plant species between the San Gabriel and Santa Monica mountains. It would also provide excellent public enjoyment opportunities.

Regional wildlife corridors essential to maintaining biodiversity in the study area extend beyond the Rim of the Valley Corridor study area to the Sierra Pelona in the Angeles National Forest and the Topatopa Mountains in the Los Padres National Forest. Although these important connections are beyond the authorized study area, there are opportunities to work in partnership with existing agencies, organizations, and landowners to encourage conservation within these corridor areas.

The total acreage for a new park unit which would include the primary resource (Santa Susana Mountains, San Gabriel Mountain foothills, Upper Santa Clara River area, Arroyo Seco) and connecting wildlife corridors would be approximately 258,600 acres.

Conclusion – Boundary Size and Configuration

Approximately 258,600 acres of land in the study area that are not already within the boundaries of SMMNRA, the Angeles National Forest, or San Gabriel Mountains National Monument are of sufficient size and configuration to protect nationally significant and suitable resources in the San Gabriel Mountain foothills, Upper Santa Clara River watershed, Santa Susana Mountains, and portions of the Arroyo Seco corridor (*Table 3-6: Boundary Configuration – New Park Unit*). Protection of adjacent wildlife/habitat corridors within the study area (Simi Hills, Conejo Mountain-Las Posas Hills, Verdugo Mountains-San Rafael Hills) would ensure long-term protection of the area's high biodiversity, particularly in the face of ecosystem stressors such as climate change, increased fire-frequency, and urbanization. However, because such a boundary configuration would need to be contiguous to SMMNRA to provide for habitat connectivity, adding these areas to SMMNRA (as opposed to designating a new, separate national park

unit) would allow for a more efficient and feasible management approach. This is explored further in the costs and operations section to follow and in *Chapter 4: Boundary Adjustment Evaluation*.

U.S. Forest Service managed areas would not need to be included in a new park unit because the NPS and U.S. Forest Service already have broad authority for cooperative management.

Existing Resource Degradation and Threats to Resources

Despite extensive urbanization and development in the region, the Rim of the Valley Corridor study area contains nationally significant resources with a relatively high degree of integrity. Approximately 84% of the study area lands are protected recreation areas, conserved open spaces, or vacant undeveloped lands. Although certain areas of the study area are degraded or threatened by degradation, restoration opportunities exist to improve these areas through collaborative restoration efforts. For example, the U.S. Army Corps of Engineers is completing a feasibility study to restore an urbanized stretch of the Los Angeles River, creating new riparian areas and recreational opportunities.

Isolated pockets of significant resources also exist within other portions of the study area where extensive urbanization has fragmented natural habitat. The Angeles National Forest and San Gabriel Mountains National Monument contain highly significant resources, however, certain areas are impacted by a variety of factors, including infrastructure, private inholdings, concentrated visitor use, and recreational activities such as off highway vehicle use. River-based recreational activities are extremely popular, and major recreation areas often experience high levels of congestion on busy summer weekends. High use visitor areas have higher incidences of litter, graffiti and other types of vandalism. Some visitors alter river bed geomorphology by creating rock dams for swimming areas. Despite these impacts, the San Gabriel Mountains support high levels of biodiversity. In addition, within the study area, approximately 12,000 acres of San Gabriel Mountains National Monument is designated wilderness.

Regional population growth and future development pose a threat to significant resources and future recreational opportunities within the study area. Existing and proposed urban development, including transportation projects, water and sewer projects, and new housing threaten sensitive plant communities, wildlife corridors, and archeological sites. Private development of residences along ridgelines and oceanfront areas intrude on scenic vistas.

Recent studies of large mammals in the Santa Monica Mountains have demonstrated that many species have difficulty crossing major freeways such as U.S. Highway 101, resulting in fatalities and inbreeding in the local mountain lion population. Future development proposals will likely continue to degrade resource integrity and further impact wildlife corridors, resulting in additional adverse effects on the area's high biodiversity. Without careful planning and protection, important wildlife corridors between the Santa Monica Mountains and the San Gabriel and Topatopa Mountains could be lost.

Urban development and increased fire frequency make native vegetation more vulnerable invasion by nonnative species. The most vulnerable locations in SMMNRA include areas along roads and trails and disturbed landscapes. In SMMNRA, nonnative plant colonization is also more prevalent in grasslands and riparian areas compared to coastal sage scrub and chaparral communities (Stoms et al. 2012).

Impacts from climate change may increase or extend droughts, threatening area water supply, including for wildlife. Rising temperatures and altered rainfall may cause additional stress on native habitat and increase air pollution. Such changes could cause native and endemic plants to move northward and/or toward the coast, following the shifts in their preferred climate. Native and endemic plants in southern California could move higher in elevation into cooler but highly vulnerable refugia. For example, the San Gabriel Mountains are predicted to be an area for native plants and animals seeking refuge as climate change begins to impact their habitat (Loarie et al. 2008). Enhanced protection of these areas and their connections to other significant habitat areas in the region may help to offset future habi-

tat stressors from climate change. Protecting large landscapes and corridors through which plants and animals can move to such refugia, and assisting plants and animals in reestablishing themselves in new regions, may help conserve biodiversity.

Threats from environmental contamination of specific parcels are likely to be found in some portions of the study area given the diversity of land uses. For example, the Santa Susana Field Laboratory located near the crest of the Simi Hills at the western border of the San Fernando Valley is the site of a former rocket engine test and nuclear research facility. The 2,849-acre field laboratory is currently the focus of a comprehensive environmental investigation and cleanup program, conducted by Boeing, the U.S. Department of Energy and the National Aeronautics and Space Administration, and overseen by the Department of Toxic Substances Control. Given the thousands of parcels of land that exist throughout the study area, parcel level evaluation of specific environmental contamination is not within the scope of this study. Any land acquisition would be dependent on future assessment to determine whether proposed acquisitions would meet NPS and Department of the Interior standards. The Department of the Interior discourages acquisition of property contaminated with hazardous substances. Further, this policy states that contaminated lands should not be acquired unless otherwise directed by Congress, court order, or as determined by the Secretary of the Interior. Any property under consideration for NPS acquisition would therefore be assessed for environmental contaminants. If contamination exists, further evaluation would take place to determine the feasibility of managing the land given the potential transfer of liability and costs for remediation and/or restoration.

Conclusion - Existing Resource Degradation and Threats to Resources

Despite existing resource impacts and threats from urbanization and development, approximately 84% of the study area contains protected or unprotected undeveloped lands, which contain, or have the potential to contain, significant resources of high integrity. Because some areas of the study area have resource degradation or threats that would preclude direct NPS management, these areas may not be considered for NPS land acquisition should they be included in a new national park unit. In some cases, opportunities exist to improve degraded areas through collaborative restoration efforts.

Social and Economic Impacts

Designation of a new national park unit within some portion of the study area would likely have a wide range of economic and social impacts on the area. Most impacts would be beneficial. The designation of national parks typically provides an economic benefit to the surrounding community.

Economic Impacts of National Park Units

In 2010, the national park system received 281 million recreation visits, where visitors spent $12.13 billion in local gateway regions (areas within 60 miles of the park). Visitors staying outside the park in motels, hotels, cabins and bed and breakfast accommodations accounted for 56% of the total spending. Of this spending, 50% was spent on lodging and meals, 19% on gas and local transport, 10% on amusement, 8% on groceries, and 13% for other retail purchases. This spending contributed to the national economy with 258,400 jobs, $9.8 billion in labor income, and 16.6 billion in value added in 2010 (NPS 2011).

Combining local impacts across all parks, 156,280 jobs, $4.68 billion in labor income, and $7.65 billion value, was added in 2010. Nationally, lodging, restaurants, retail trade, and amusements, represented the four local economic sectors most directly affected by non-local visitor spending. This visitor spending supported 43,160 jobs in restaurants and bars, 32,000 jobs in lodging sectors, 23,000 jobs in retail and wholesale trade, and 18,560 jobs in amusements in 2010 (NPS 2011).

Beyond visitor spending, national park designation also provides local and national economic benefit through the NPS payroll. In 2010, over 26,000 individuals served as employees in the National Park Service with a total payroll of $1,709 million in wages, salaries and payroll benefits. The total impacts of park payrolls were $1.95 billion in labor income, $2.16 billion in value added, and 32,407 jobs in 2010. These data include the induced effects of the spending of NPS wages and salaries in the local region. The impacts of the park payroll

Table 3-7: 2010 Payroll Impact of Santa Monica Mountains NRA

	Park Payroll			Impacts of Park Payroll		
	Salary ($000's)	*Payroll Benefits ($000's)*	*NPS Jobs*	*Total Jobs*	*Labor Income ($000's)*	*Value Added ($000's)*
Santa Monica Mountains NRA	6,027	1,726	123	149	9,017	10,039

Source: Economic Benefits to Local Communities from National Park Visitation and Payroll, 2010

Table 3-8: 2011 Spending and Economic Impact of Visitors to Santa Monica Mountains NRA

	Public Use Data		Visitor Spending 2011			Impacts of Non-Local Visitor Spending	
	2011 Recreation Visits	*2011 Overnight Stays*	*All Visitors ($000's)*	*Non-Local Visitors ($000's)*	*Jobs*	*Labor Income ($000's)*	*Value Added ($000's)*
Santa Monica Mountains NRA	609,636	144	26,192	17,258	242	9,013	15,833

Source: Economic Benefits to Local Communities from National Park Visitation, 2011

In 2011, Santa Monica Mountains National Recreation Area supported 242 jobs and $9 million in labor income. Visitor spending for FY 2011 was $26.2 billion, of which $17.2 billion came from non-local visitors. In payroll impact, SMMNRA provided $9 billion in labor income and $10 billion in added value.

on the national economy were $2.41 billion in labor income, $2.96 billion in value added, and 41,700 jobs. The combined impact of non-local visitor spending and NPS payroll-related spending yielded a total impact of 300,000 jobs nationally of which 189,000 are in the local regions around national parks (NPS 2011).

In 2011, Santa Monica Mountains National Recreation Area supported 242 jobs and $9 million in labor income (*Table 3-7: 2010 Payroll Impact of Santa Monica Mountains NRA*). Visitor spending for FY 2011 was $26.2 billion, of which $17.2 billion came from non-local visitors (*Table 3-8: 2011 Spending and Economic Impact of Visitors to Santa Monica Mountains NRA*)(NPS 2013f). In payroll impact, SMMNRA provided $9 billion in labor income and $10 billion in added value (NPS 2010).

Other Potential Impacts

Other socioeconomic concerns identified during the public scoping process included the potential effects of a park designation on private lands and existing regulatory authorities. The establishment of a new national park unit in the study area would not necessarily establish new regulatory or land use authority over local governments or private lands within the boundary. In Santa Monica Mountains National Recreation Area (SMMNRA), the NPS has proprietary jurisdiction. In proprietary jurisdiction parks, the state government has not ceded the state's jurisdiction over the park area to the NPS. The state enforces its law but not federal law.

In proprietary jurisdiction parks lands not owned by NPS are typically regulated by local and state agencies or other federal authorities that have jurisdiction in the area. However, under the 1916 National Park Service Organic Act (16 U.S. Code, Chapter 1), which established the National Park Service), the Secretary of the Interior has broad authority to establish regulations pertaining to other lands within authorized national park unit boundaries. Such regulations are found in 36 Code of Federal Regulations (CFR) Chapter 1. Most regulations pertain to lands under NPS ownership. However, some regulations affect uses within a park unit boundary regardless of ownership. These regulations pertain to the operation of any solid waste disposal site, mineral extraction activities, and the exercise of nonfederal oil and gas rights. To date, the only such regulations that have been applied to such activities within the boundary of SMMNRA are the regulations pertaining to solid waste disposal sites as required by 36 CFR Chapter 1, Part 6. These regulations prohibit the operation of any solid waste disposal site, except as specifically provided for, and govern the continued use of any existing solid waste disposal site within the boundaries of any unit of the National Park System. For example, within SMMNRA, the Sanitation Districts of Los Angeles County obtains a permit from NPS to operate the Calabasas landfill in Agoura Hills.

Although mineral extraction activities currently do not take place in the existing SMMNRA

boundary, NPS regulations pertaining to mineral exploration and development may apply to national park units where prospective operators hold mineral interests, unless or until these interests are purchased by the U.S. government. The purpose of NPS regulations is to implement the NPS Organic Act of 1916 by providing for reasonable protection of park resources and values that may be affected by the exercise of the mineral interests.

Regulations located at 36 CFR Part 9, Subpart B, govern the exercise of nonfederal oil and gas rights within NPS units. "Nonfederal oil and gas rights" are either owned by a state or a private entity. Existing rights either pre-date the establishment of the park or have not been acquired by the United States. These regulations are designed to ensure that activities undertaken pursuant to these rights are conducted in a manner consistent with the purposes for which the NPS and each unit thereof were created. These regulations would primarily apply if NPS were to purchase lands where oil and gas rights are retained by another entity. Oil and gas development is prevalent in portions of the Santa Susana Mountains and Simi Hills.

The extent to which such regulations would affect land uses would be dependent on what is specified in authorizing legislation, and the nature of the activities. Legislation would be required to establish a new unit of the national park system. It should be noted that through any resulting legislation, Congress can make determinations about uses and regulations within specific park units. For example, some national recreation areas are open to mineral leasing if specified resource protection and administrative objectives can be met.

Privately held lands would continue to be regulated by local land use authorities (cities and counties). If local development proposals have the potential to impact park resources SMMNRA staff will provide comments on such projects. Local jurisdictions could choose to use such comments to mitigate or limit the effects of development on SMMNRA resources. Land use planners frequently have the ability to direct the intensity or location of the development toward more durable areas and away from sensitive resources and/or to require setbacks or open space as part of development projects. Additional information on regulations related to mineral extraction and an assessment of land use and social and economic impacts related to these regulations is provided in the evaluation of land use impacts in *Chapter 6: Environmental Consequences*.

Conclusion - Social and Economic Impact

The social and economic impacts appear to be largely beneficial and would support the feasibility of an NPS designation in the Rim of the Valley Corridor study area. NPS regulatory authorities would only apply to lands owned and managed by NPS, with the exception of solid waste facilities.

Costs Associated with Operation, Acquisition, Development and Restoration

Costs associated with management of a national park unit include annual operational costs (primarily for staffing) and periodic costs for land acquisition, facility development, and resource management, including restoration. The NPS allocates funds to its park units in two categories—for daily operations (annual operating costs), and for specific, non-recurring projects. Park managers use funding for daily operations to pay for visitor and resource protection, interpretation and education, and facilities operations, among other things. About 80% or more of the park units' daily operations funds pay for salaries and benefits for staff to carry out these mission components, while the remainder is used for overhead expenses such as utilities, supplies, and training.

Project-related funding supports non-recurring projects such as replacing roofs on park facilities or rehabilitating campgrounds. Project funding also supports natural resource inventory and monitoring programs. In addition to providing the funding for daily operations and projects, the Congress has enacted legislation authorizing park units to collect visitor fees to provide additional funds to use for specified park operations. Visitor fees have been used, for example, to construct roadside exhibits and to rehabilitate facilities.

Park units are also authorized to accept and use monetary and non-monetary donations to meet the purposes of the NPS. Examples include donations from non-profit cooperating associations or friends groups for interpretive

Table 3-9: Operating Budgets for Comparable and Related National Park Units (FY 2012)

National Park Unit	FTE (Full Time Equivalent) Staff	Acres	Annual Visitation	FY2012 NPS Annual Operating Budget
Santa Monica Mountains National Recreation Area	99	156,670	633,054 (NPS lands)	$8,600,000
Sequoia and Kings Canyon National Parks	312	866,000	1,106,584/591,033	$16,500,000
Redwoods National and State Parks	118	139,000	352,517	$8,900,000

Source: NPS 2013f

Table 3-10: Comparative Annual Operational Costs for NPS Roles in the Rim of the Valley Corridor Study Area

New National Park Unit	Boundary Adjustment to SMMNRA	Expanded Partnership Roles
$8-10 Million (may be less if positions for new park unit are shared with SMMNRA)	$1.5 – 3.5 Million over existing SMMNRA operational costs ($8.6 Million in FY2012)	$400,000-$1,000,000
Based primarily on current operational levels of park additions.	Additional costs would primarily be for new staff. Many existing positions would support the new SMMNRA. Operating costs would primarily for personnel. Other costs that would come out of the annual operating budget would be related to office space.	Costs would be for 6-12 positions dedicated to providing technical assistance beyond SMMNRA for trail and recreation planning, conservation, preservation, restoration, outreach and educational efforts.

Given the overlap in resource significance, associated management challenges, and the determination that any new national park unit within the area would need to be managed using the same collaborative framework as SMMNRA, adding new areas to SMMRNA would achieve largely the same resource management and public enjoyment objectives as establishing a new national park unit. Simultaneously, it would result in operational cost savings and efficiencies.

exhibits, park literature, new construction, enhancement of wildlife programs, or habitat restoration.

For the purposes of this study, the NPS has developed cost estimates based on the very broad needs typically associated with the annual operational requirements of establishing a new national park unit. For comparison, the costs of expanding the boundary of SMMNRA to include portions of the study area and the costs of expanding existing NPS partnership activities within the study area are also explored.

Operational Costs

Congress provides funding for the NPS through a number of appropriations accounts; the largest is the Operation of the National Park System (ONPS), which funds on an annual basis the management, operations, and maintenance of park areas and facilities and the general administration of each national park unit. Operational costs of national park units vary widely, depending on the amount and type of resources managed, number of visitors, level of programs offered, and many other factors. Operating costs for a partnership park unit or NPS technical/administrative assistance would typically be lower than operating expenses associated with a traditional national park where the NPS alone is responsible for land management and visitor services. *Chapter 5: Alternatives*, explores potential operational costs in more detail for each management alternative considered in this special resource study.

Table 3-9: Operating Budgets for Comparable and Related National Park Units (FY 2012) provides annual operating costs for existing and related national park units that are comparable in size, acreage, operations, or visitation. Annual operating costs for a new national park unit that would work in partnership with existing agencies in organizations in the area could range from $8 to $10 million at operational levels similar to SMMNRA. It should be noted that for new park units to receive full funding, it can often take many years, resulting in a decreased ability to achieve park purposes and management objectives initially. In recent years, where new national park units have been established in close proximity to existing park units, nearby existing national parks have taken on initial management responsibility for the new areas. This allows for additional capacity in planning the establishment of the new park unit. For example, the Tule Lake Unit of World War II Valor in the Pacific Monument (Tulelake, California) established in 2008 is currently operationally supported by the nearby Lava Beds National Monument. Cesar Chavez National Monument, established in 2012, was initially supported by Sequoia and Kings Canyon National Parks. Although positions and management could be shared between SMMNRA and a new park unit, a new national park unit in the Rim of the Valley Corridor would still require its own

Given the high cost of land in Los Angeles and Ventura counties, land acquisition would be targeted.

management plans (as required by NPS *Management Policies 2006*), budgetary systems, and signs/interpretive materials.

As further evaluated in *Chapter 4*, a boundary adjustment that would protect significant resources, associated wildlife corridors, and areas with new opportunities for public enjoyment would be of similar configuration as a new park unit because it would include the Santa Susana and San Gabriel foothills as well as the Upper Santa Clara River areas which rely on conservation of the same regional wildlife corridors. Given the overlap in resource significance, associated management challenges, and the determination that any new national park unit within the area would need to be managed using the same collaborative framework as SMMNRA, adding new areas to SMMRNA would achieve largely the same resource management and public enjoyment objectives as establishing a new national park unit. Simultaneously, it would result in operational cost savings and efficiencies. Therefore, expanding SMMNRA, rather than creating a new national park unit would be a more feasible approach to NPS management.

Annual costs for a boundary expansion including portions of the Rim of the Valley Corridor outside of the U.S. Forest Service managed areas (over 300,000 acres) to protect significant resources, conserve wildlife corridors, and provide new opportunities for public enjoyment could range from $1 to $3.5 million over the existing annual operating budget for SMMNRA ($8.6 million in FY2012), depending on the size of the added areas and the management emphasis identified through implementation plans (*Table 3-10: Comparative Annual Operational Costs for NPS Roles in the Rim of the Valley Corridor Study Area*). Costs would primarily cover additional staffing to provide increased technical assistance to area communities for resource management and recreation planning, law enforcement, maintenance, and outreach. Given the close proximity of the study area to more than 18 million residents, and the significantly high concentration of biodiversity and cultural resources that would be protected, the NPS would be able to achieve a high level of resource protection and public enjoyment opportunities for relatively little additional investment in annual operational costs.

Expanding technical assistance and partnerships in the study area without a boundary adjustment would likely cost an additional $400,000-$1,000,000 annually (*Table 3-10: Comparative Annual Operational Costs for NPS Roles in the Rim of the Valley Corridor Study Area*). These annual operating costs would primarily support 6 to 12 positions needed to provide technical assistance to communities, agencies, and landowners for park and open space conservation, trail planning, and resource management. *Chapter 5: Alternatives*, explores potential operational costs in more detail for each management alternative evaluated in this study. Three alternatives are considered in addition to the no action alternative, one that explores expanded NPS partnerships and technical assistance opportunities (cooperative conservation) and two that explore boundary adjustments to SMMNRA. Generally, alternatives that propose boundary adjustments to SMMNRA (alternatives C and D) would cost more than the technical assistance and partnership roles as recommended in alternative B (cooperative conservation). Because it is assumed that the NPS would acquire and manage land in both alternatives C and D, these alternatives would likely require some level of facilities development, maintenance, and management.

Land Acquisition Costs

Land acquisition costs cannot be estimated without more specific proposals for land acquisition. NPS funds for land acquisition are currently very limited, and proposed acquisitions compete for national funds with many other worthy sites. Between 1978 and 2011, the NPS acquired 23,300 acres in SMMNRA, investing over $163 million in appropriated funds. The majority of lands acquired by NPS (90% or 21,000 acres) were purchased prior to 1996. Since that time land acquisition funding has decreased. In the last ten years, approximately 1,800 acres have been purchased by the NPS. Land values within the study area are generally higher in the Santa Monica Mountains and Los Angeles coastal areas. Currently, land values for larger parcels of undeveloped land in the study area north of the Santa Monica Mountains are lower.

Given the high cost of land in Los Angeles and Ventura counties, land acquisition would be targeted. Over the past thirty years, SMMNRA

has purchased land in this manner. Priorities for land acquisition are identified in a land protection plan which establishes a range of land conservation approaches in addition to direct land acquisition. Subject to available funds and consistent with prior land acquisition efforts at SMMNRA, the NPS would consider land acquisition or land management in specific areas found to be nationally significant, that meet NPS criteria for suitability and feasibility, and where there are interested willing sellers. A land protection plan would identify priorities for land acquisition. However, given the number of parcels that would be included in the boundary adjustment, the land protection plan could be complex and challenging to update on a regular basis.

Collaborative management between the NPS and other land management agencies provides more advantages for obtaining land acquisition funding, a highly competitive process that requires considerable public and political support. Funding could also be obtained from multiple sources over time for targeted lands as those areas become available for acquisition. For example, the Santa Monica Mountains Conservancy (SMMC) and the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) currently have authority to purchase land in the study area for conservation and recreational purposes. Within any alternative considered in this study, these agencies would continue to purchase land to meet their individual agency objectives.

Development Costs

Development costs for NPS units vary widely, depending on existing conditions and facilities and the types of conditions and facilities desired. New national park units frequently invest funds to inventory and document park resources, for developing management or treatment plans and educational/interpretive materials for these resources, and for developing or improving facilities for visitors and for park operations.

Because the study area contains visitor serving parks, open space, and trails in many areas, after establishment visitors would primarily use these sites and facilities. Over time, as land is acquired, project specific costs for new or future facilities such as trails, exhibits, and other supporting visitor facilities would be identified through implementation planning. If Congress were to authorize a new park unit, the NPS would prepare implementation plans to guide future management of the area and to provide more detailed cost estimates for both operations and facility development. Specific costs would be dependent on management priorities and approaches identified through implementation planning and the location, size and configuration of future land acquisition.

Through cooperative management agreements, the NPS could also share operational facilities with existing agencies or share costs for new facilities as deemed necessary. Park office space already exists at SMMNRA headquarters and at several other sites in the area. Opportunities exist to share or lease additional space with partner agencies to accommodate to new positions that would support planning and management activities in the boundary adjustment area.

Conclusion - Costs

The NPS finds that the creation of a new, separate national park unit is feasible using the existing collaborative partnership-based park model exemplified by SMMNRA. However, a new park unit would cost considerably more than expanding existing SMMNRA park operations and extending technical assistance to the broader region. Although positions and resources could be shared or supported by SMMNRA, the new park unit would require its own budgetary systems, signs, and implementation plans. Given the high cost of land in Los Angeles and Ventura counties, a targeted land acquisition approach would be feasible. Land acquisition would only be considered where landowners have expressed interest in selling.

Public Interest and Support

The NPS provided opportunities for public and stakeholder involvement in 2010 (public scoping) and 2012 (preliminary findings and alternative concept scoping). Public comments overall were supportive of additional NPS involvement in the Rim of the Valley Corridor study area to protect significant resources, conserve regional wildlife corridors, and to improve trail systems such as the Rim

The creation of a new national park unit is not feasible, in comparison to the resource management and operational efficiencies afforded by a boundary adjustment to SMMNRA.

of the Valley Trail. Some concerns were raised regarding costs and potential effects of a new NPS designation on existing agencies, recreational uses, and property owners.

The NPS also held meetings with federal, state, and local agencies responsible for conservation and recreation within the study area. These agencies have been supportive of a National Park Service management role in the study area. The Santa Monica Mountains Conservancy and California State Parks have expressed continuing support for the opportunity to expand the current cooperative management agreement between these agencies and the NPS into the Rim of the Valley Corridor area. Agencies and local governments within the area also stressed the value of having a federal partner to leverage funds to conserve lands for open space and recreation.

Public Scoping Comments

During public scoping, many public comments expressed support for an expanded NPS role within the Rim of the Valley Corridor study area to provide coordination for the many local, regional, and state agencies that manage recreation and open space in the area. Although many commenters supported adding to SMMNRA, others felt that the study should consider a separate designation for resources in the San Gabriel and Santa Susana Mountains. Some commenters also supported a new NPS designation or expansion of SMMNRA only if it would not result in new restrictions on existing recreational uses such as mountain biking. Many comments emphasized the potential for the NPS to leverage more resources for the region.

Concerns about an increased NPS presence in the study area included questions about potential reductions of investment in current conservation efforts in the Santa Monica Mountains and concerns about the overall costs of SMMNRA expansion and/or costs for a new park unit. Some commenters were concerned that NPS designations in the Rim of the Valley Corridor would invoke limits on the ability of private landowners to expand or develop their property, while others expressed concern that NPS designation would limit the range of recreational uses allowed.

Comments on Preliminary Findings and Alternative Concepts

In 2012, preliminary findings and alternative concepts were presented to the public. The alternative concepts presented SMMNRA boundary adjustment options and partnership opportunities to protect significant resources in the study area and to provide for public enjoyment. The NPS received over 5,000 comment letters, most of which supported the broadest possible boundary adjustment to SMMNRA within the study area. Although some individuals and landowners expressed concerns about possible loss of local control or restrictions on their ability to carry out necessary functions, most governmental and private respondents, including ten Congressional representatives, the Santa Monica Mountains Conservancy, California State Parks, Los Angeles County Department of Regional Planning, and several local communities (Moorpark, Glendale, Santa Clarita, City of Los Angeles) supported one of the proposed boundary adjustment alternatives or a combination thereof. There was also considerable support for the partnership approaches for wildlife habitat linkages that extend beyond the study area.

Concerns about the preliminary alternatives were raised regarding potential impacts on utility corridors and sanitation district facilities. Some commenters also supported the no action alternative because of concerns about potential effects on local land use decisions and the potential costs of a boundary expansion. A few commenters expressed concern that an expanded SMMNRA would reduce overall funding for land acquisition in the Santa Monica Mountains or other national park units. These concerns are addressed in the alternatives as presented in *Chapter 5: Alternatives*.

Conclusion – Public Interest and Support

Public outreach for this study, including numerous meetings with public officials and land management organizations, has demonstrated significant public interest and support for the NPS to play a collaborative role in the study area through a boundary adjustment to SMMNRA or establishment of a new national park unit.

Table 3-11: Feasibility Factors (New National Park Unit) - Summary of Findings

Criteria	Findings
Land use, current and potential site uses, ownership patterns, planning and zoning	Yes. The study area includes a diverse array of land uses from large, undeveloped natural areas to dense urban corridors. Land ownership is also complex. Many federal, state, and local agencies and private landowners own and manage land within the study area. Cooperative/collaborative management as exemplified at SMMNRA would be a feasible NPS management approach given the complex land use and ownership patterns within the study area. Given the size and scale of the Angeles National Forest and San Gabriel National Monument, the NPS has determined that continued U.S. Forest Service management would be necessary and desirable. However, collaborative management between the NPS and U.S. Forest Service could occur through cooperative management agreements under current authorities.
Access and public enjoyment potential	Yes. There is considerable potential for additional public access and enjoyment within the study area. The study area contains major transportation corridors and public transportation systems that provide access to area resources. Existing opportunities for a wide variety of recreational uses exist throughout the study area and there is ample opportunity for future development of more recreational opportunities and improved access. A new national park unit could build on existing open space, recreational and trail systems and provide could new opportunities to better connect parks and open space, complete trail systems, and provide interpretive and educational opportunities associated with the many cultural and natural resource types represented in the study area. The study area is within nation's the second largest metropolitan area and provides many opportunities to provide a national park experience for new audiences and communities that currently lack opportunities to access local recreational resources.
Sufficient boundary size and configuration	No. Approximately 258,600 acres of land in the study area that are not already within the boundaries of SMMNRA or the Angeles National Forest are of sufficient size and configuration to protect nationally significant and suitable resources in the San Gabriel Mountain foothills, Upper Santa Clara River watershed, Arroyo Seco, Santa Susana Mountains. Inclusion of adjacent wildlife corridors within the study area (Simi Hills and Conejo Mountain – Las Posas Hills, Verdugo Mountains-San Rafael Hills) would ensure long-term protection of the area's high biodiversity, particularly in the face of ecosystem stressors such as climate change, increase fire-frequency, and urbanization. However, because such a boundary configuration would be contiguous to SMMNRA to provide for habitat connectivity, adding these areas to SMMNRA (as opposed to designating a new, separate national park unit) would allow for a more efficient management approach. The Angeles National Forest and San Gabriel Mountains National Monument would not need to be included in a new park unit, as the NPS and U.S. Forest Service have broad authority for authority for cooperative management to achieve mutual objectives through cooperative management agreements.
Existing resource degradation and threats to resources	Yes. Despite existing resource impacts and threats from urbanization and development, approximately 84% of the study area contains protected or unprotected undeveloped lands. A large portion of this area encompasses significant resources of high integrity. Although certain areas of the study area are degraded or threatened by degradation, opportunities exist to improve these areas through collaborative restoration efforts.
Social and economic impacts	Yes. The social and economic impacts appear to be largely beneficial and would support the feasibility of an NPS designation within the Rim of the Valley Corridor study area.
Costs associated with acquisition, development, restoration and operation	No. The creation of a new, separate national park unit would be feasible using the existing collaborative partnership-based park model exemplified by SMMNRA. However, the costs of a new national park unit are not feasible when compared to the lesser costs of expanding the existing SMMNRA boundary, which is also under consideration in this special resource study.

Overall Feasibility Conclusion

There is considerable potential for additional public access and enjoyment within the study area. Opportunities for a wide variety of recreational uses already exist in the many trails, historic sites, and parks located throughout the study area, and there is ample opportunity for land conservation and future development of more recreational opportunities and improved access, particularly for those communities that are deficient in opportunities to access to parks and open space. Given the complexity of land use and ownership within the study area a new park unit would only be feasible using a collaborative management approach that retains with existing ownership patterns and regulatory authorities as exemplified by current SMMNRA management.

The creation of a new national park unit is not feasible, in comparison to the resource management and operational efficiencies afforded by a boundary adjustment to SMMNRA (*Table 3-11: Feasibility Factors (New National Park Unit) - Summary of Findings*). Many of the significant resources within the study area augment the national significance of SMMNRA and provide habitat connectivity essential for long-term preservation of the significant resources within the Santa Monica Mountains, thus warranting physical connection to the SMMNRA boundary and a seamless interagency management approach.

Need for Direct NPS Management

The need for direct NPS management is the final criterion for a favorable recommendation for a proposed new unit of the national park system. Only areas that are determined significant, suitable, and feasible as a new national park unit are evaluated for this final criterion. This criterion requires a finding that NPS management would be superior to other potential alternative management arrangements by other entities. Because a boundary adjustment was found to be a more feasible option for NPS management within the study area, this criterion need not be evaluated.

Overall Conclusion – New National Park Unit

The study finds that the Rim of the Valley Corridor contains nationally significant resources suitable for inclusion in the national park system. While the study found that multiple feasibility factors relevant to establishing a new unit of the national park system could be met, the assessment of boundary adjustment criteria in the following chapter identified resource management and operational efficiencies that could not be achieved through the establishment of a new unit. It was recognized that a new unit would not compare favorably with a Santa Monica Mountains National Recreation Area boundary adjustment in terms of costs, the duplication of management structures, and the complexity involved in operating two similar but independent units. The study team concludes that it would not be feasible to establish a new partnership unit that would have similar purposes to the existing park, and adjacent to or within close proximity to it. A boundary adjustment to Santa Monica Mountains NRA would be more feasible. Therefore, the study area does not meet the feasibility criterion and is not eligible for designation as a new unit of the national park system.







Top left: Western pond turtle. Top right: A young visitor to Santa Monica Mountains National Recreation Area during the RecFest event. Bottom: Control panel at the Coca rocket engine test stand at Santa Susana Field Laboratory. Photos: NPS.

Chapter 4: Boundary Adjustment Evaluation

This chapter evaluates the potential for adding to, or adjusting the Santa Monica Mountains National Recreation Area to include areas in the Rim of the Valley Corridor study area.

NPS Boundary Adjustment Criteria

The legislation authorizing the Rim of the Valley Corridor Special Resource Study directs the NPS to evaluate: (1) the suitability and feasibility of designating all or a portion of the corridor as a unit of Santa Monica Mountains National Recreation Area (SMMNRA); and (2) the methods and means for the protection and interpretation of this corridor by the National Park Service, other federal, state, or local government entities or private or non-governmental organizations.

While the special resource study criteria identify whether an area would be eligible as a new unit of the national park system, a separate set of criteria determines whether areas would be appropriate additions to an existing national park unit. When considering a boundary adjustment, the criteria evaluate how the addition will help fulfill the park unit's legislated purpose, further protect significant resources related to the purpose of the park, or address operational issues.

In accordance with §3.5 of NPS *Management Policies 2006* and as directed by the authorizing legislation for the special resource study, this study evaluates whether boundary adjustments to SMMNRA that are necessary and desirable to carrying out the purposes of the park would be necessary to:

- protect significant resources and values, or to enhance opportunities for public enjoyment related to park purposes; or
- address operational and management issues, such as the need for access or the need for boundaries to correspond to logical boundary delineations such as topographic or other natural features or roads; or
- otherwise protect park resources that are critical to fulfilling park purposes.

All recommendations for boundary changes must also meet the following two criteria:

- the added lands will be feasible to administer considering their size, configuration, and ownership; costs; the views of and impacts on local communities and surrounding jurisdictions; and other factors such as the presence of hazardous substances or exotic species.
- other alternatives for management and resource protection are not adequate.

Legislation would be required to authorize modifications to the boundary of SMMNRA.

Boundary Adjustment Criteria Evaluation

The following section addresses the criteria that must be considered for adjustments to the boundaries of national park units in accordance with §3.5 of NPS *Management Policies 2006*.

Protection of Significant Resources or Opportunities to Enhance Public Enjoyment Related to the Purpose of SMMNRA

Park purpose and significance statements from the SMMNRA *Foundation Document* (currently underway), as described in *Chapter 1: Introduction* provide a framework for evaluating whether study area resources would contribute to the protection of significant resources or opportunities to enhance public enjoyment.

SMMNRA Park Purpose and Significance

A park purpose statement identifies the specific reason(s) for establishment of a particular unit of the national park system. The SMMNRA *Foundation Document* park purpose statement was drafted through a careful analysis of its enabling legislation and the legislative history that influenced its development. The national recreation area was established when the enabling legislation adopted by Congress was signed into law on November 10, 1978. The purpose statement as defined in the foundation document is:

As the region continues to develop and urbanize, the Santa Monica Mountains are becoming isolated from other natural areas in southern California. Continued habitat loss and fragmentation threatens the long-term existence of many native plant and animal species and is one of the greatest threats facing biodiversity protection.

Santa Monica Mountains National Recreation Area is a collaborative partnership that protects a mosaic of natural resources, cultural heritage, and scenery within North America's Mediterranean biome, and provides public enjoyment opportunities, including connections to wild places in the greater Los Angeles metropolitan area.

The SMMNRA *Foundation Document* also outlines the national significance of SMMNRA. The following section provides the SMMNRA significance statements (in italics) followed by a description of how portions of the study area outside of the existing boundary of SMMNRA would contribute to the protection of SMMNRA's national significance.

SMMNRA Significance - High Biodiversity
Influenced by the mild climate and geologic setting, Santa Monica Mountains National Recreation Area contains high concentrations of rare, sensitive, and endemic species, and represents one of the best remaining examples of the Mediterranean biome in North America. Mediterranean ecosystems are among the world's rarest and most endangered land types, occurring in only five locations throughout the world.

The study area as a whole also contains resources that are essential to the long-term conservation of Santa Monica Mountain's high biological diversity. Physical connection to other large protected areas is essential to maintaining these resources. As the region continues to develop and urbanize, the Santa Monica Mountains are becoming isolated from other natural areas in southern California. Continued habitat loss and fragmentation threatens the long-term existence of many native plant and animal species and is one of the greatest threats facing biodiversity protection. Mammals, such as mountain lions, bobcats, and badgers, are particularly at risk and are more vulnerable to local extinction in fragmented areas. Conservation biologists recognize that protecting large core habitat areas beyond the current SMMNRA boundary is the most effective way to reduce the effects of fragmentation. Maintaining or reestablishing this connectivity between large areas would help prevent isolation of wildlife populations. Protecting these broader landscapes helps ensure the resiliency of natural systems, particularly related to ecosystem stressors such as development and urbanization, increased fire frequency, and climate change.

Regional wildlife corridors identified as critical to long-term conservation of natural resources in SMMNRA include the Santa Monica-Sierra Madre wildlife corridor within the Simi Hills and eastern Santa Susana Mountains. This corridor has been documented by numerous studies and by various agencies and conservation organizations as significant on a regional and statewide basis (Penrod et al. 2006, Spencer et al. 2010). It is recognized in SMMNRA plans and studies as essential to long-term conservation of the nationally significant natural resources protected in SMMNRA.

Apart from the regional corridors described above, the Verdugo Mountains-San Rafael Hills, Griffith Park, and remnant riparian areas along the Los Angeles and Arroyo Seco river corridors function as ecological stepping stones for wildlife between the Santa Monica and San Gabriel Mountains.

As described in *Chapter 3*, in the national significance and suitability criteria evaluation, many portions of the study area outside of SMMNRA contain resources which expand on the diversity of habitat found within SMMNRA.

- The portions of the Santa Monica Mountains that are outside of SMMNRA and within the study area (approximately 53,200 acres) contain examples of chaparral vegetation and high quality riparian habitat such as white alder riparian woodland and forest and California bay forest, all of which contribute to the biodiversity currently found at SMMNRA.
- The Conejo Mountain – Las Posas Hills area (approximately 40,100 acres) northwest of SMMNRA supports a broad range of imperiled vegetation communities and sensitive plant and animal species. These significant resources would expand and enhance representation of natural resource themes represented at SMMNRA by adding to the quantity, quality, and diversity of chaparral related vegetation communities.

Over 18 million people live within a short drive of the area, including over half of California's population and more than 5% of the nation's total population.

- The Simi Hills outside of the existing SMMNRA boundary (approximately 45,700 acres) contain a broad range of sensitive plant and animal species, some of which are rare and endemic. As an example, Laskey Mesa in the Simi Hills contains one of the most outstanding examples of native grassland in southern California.
- Much of the Santa Susana Mountains (approximately 80,600 acres) is undeveloped with several large areas protected for conservation and recreational values. Including the Santa Susana Mountains in SMMNRA would enhance the quantity, quality, and diversity of grassland and chaparral related vegetation communities represented at SMMNRA. Numerous canyons in the Santa Susana Mountains also contain sensitive riparian communities, such as black cottonwood forest and Fremont cottonwood forest. The north side of the Santa Susana Mountains is influenced by a convergence of montane and desert influences that create rare and unusual plant communities, including some ancient relict plant communities (e.g. bigcone Douglas-fir and canyon live oak). There are also communities at their northern or southernmost limits such as valley oak savanna.
- The Verdugo Mountains-San Rafael Hills (approximately 24,000 acres) feature an array of chaparral-related vegetation communities, including several considered to be imperiled, and riparian vegetation, including types not found in SMMNRA such as white alder riparian woodland and forest and California bay forest.
- Although most of the San Gabriel Mountains are protected and managed by the U.S. Forest Service, the San Gabriel Mountains foothills (approximately 20,300 acres), a mix of both public and private ownership similar to SMMNRA, contain chaparral vegetation types not currently found in SMMNRA, high quality riparian areas, and excellent examples of alluvial fan sage scrub, a distinct and sensitive natural community that has adapted to the unique fluvial processes of the Los Angeles basin. Tujunga Wash, which extends from the mountains into the interface between the foothills and valley, features an excellent example of this rare vegetation type.
- The Upper Santa Clara River area (approximately 36,500 acres) contains more sensitive plant community types (at least seventeen), than any other portion of the study area (LADRP 2012a). Outstanding examples include high quality riparian and alluvial fan vegetation unique to the Transverse and Peninsular Ranges of southern California.
- The Los Angeles and Arroyo Seco river corridors (approximately 7,100 acres within the study area) contain remnant riparian areas that provide habitat and facilitate movement for wildlife. Restoration efforts are underway for both river corridors.

SMMNRA Significance - Recreational Opportunities/National Park Gateway

The coastal and mountainous terrain of Santa Monica Mountains National Recreation Area offers an abundance of recreational, health, and educational benefits and contributes to clean air and water for the Los Angeles Region. Its proximity to one of the most densely populated regions of the United States provides a gateway to experience national park sites and other public parklands.

More than 18 million people live within close proximity to the area, including over half of California's population and more than 5% of the nation's total population. Many nearby local communities are currently deficient in providing adequate parks and recreational opportunities for residents. This is particularly true of communities in the City of Los Angeles. Neighborhoods around downtown Los Angeles have the highest population density within the study area and the greatest concentration of residents that lack adequate access to park resources. In addition, most of these residents are from predominantly minority and lower income communities (The City Project 2011).

SMMNRA authorizing legislation directs the NPS to manage resources for both the residents of the greater Los Angeles metropolitan area and for visitors to the region. As documented in the significance analysis in *Chapter 3*, the study area offers superlative opportuni-

The dynamics between areas of exceptionally high biodiversity and human settlement and development, including highly urbanized areas, provide unique opportunities for scientific research related to the urban wildland interface, the effects of anthropogenic disturbance, and ecological enhancement and restoration.

ties for public enjoyment. Expanding SMMNRA to include the Rim of the Valley Corridor area would add recreation areas, miles of trails, and hundreds of sites of historic interest, including local, state and nationally recognized historic sites and landmarks. Scenic vistas offer opportunities for wayside exhibits and ranger programs. Thousands of acres of undeveloped open space would provide future opportunities to expand trail systems and provide new opportunities for public enjoyment. Including these areas within SMMNRA would provide NPS with the authority to conserve open space and expend funds for trails and other facilities that would support public enjoyment of the area's significant resources.

Ongoing efforts to restore urban river corridors while creating riverside parks and trail systems will provide expanded recreational opportunities in the most densely populated areas of the greater Los Angeles metropolitan region. These urban river corridors traverse communities that have the least amount of parks and open space and lack adequate access to regional recreational opportunities in places like SMMNRA. For this reason, this study also considers an additional 5,800 acres of Los Angeles River corridor in the densely populated San Fernando Valley extending from the eastern San Monica Mountains to the Simi Hills at Ahmanson Ranch. Including this corridor in SMMNRA would allow NPS to more fully engage in existing federal, state, and local efforts to restore and provide recreational amenities along the Los Angeles River.

As described in *Chapters 2* and *3*, the study area contains many resources related to the rich and diverse heritage of southern California. These areas would provide new opportunities for the NPS to reach out to communities in the most densely populated areas of the region.

SMMNRA Significance - Archeology
Native American occupation in the Santa Monica Mountains spans more than 10,000 years, as reflected in a diversity of well-preserved archeological sites. American Indian groups, including the Chumash and Tongva, continue to have cultural ties to these resources and their associated landscapes.

Archeological sites determined eligible for listing in the National Register of Historic Places are located in subgeographic areas outside of SMMNRA. Sites in the western San Gabriel Mountains and foothills provide strong evidence of long-term occupation, seasonal encampment, resource procurement, and processing and storage sites, and regional trade networks (USFS 2005). The Simi Hills and Santa Susana Pass area also contain archeological resources of note, particularly with regard to rock art displays at the Burro Flats site and sites uncovered at Santa Susana Pass State Historical Park. Areas that are still largely undeveloped such as the and Conejo Mountain - Las Posas Hills, Santa Susana Mountains, and Upper Santa Clara River corridor, have not been extensively surveyed and provide great potential for scientific discovery and understanding of past lifeways.

SMMNRA Significance - Scientific Understanding
The Santa Monica Mountains provide an opportunity for understanding how to protect high biodiversity in a vast urban area. Additionally, the rich concentration of resources, which include an extensive range of native vegetation communities, archeological sites, and geologic and paleontological features, are all in close proximity to numerous research institutions, providing exceptional opportunities for scientific study.

As described in the evaluation of national significance in *Chapter 3*, the dynamics between areas of exceptionally high biodiversity and human settlement and development, including highly urbanized areas, provide unique opportunities for scientific research related to the urban wildland interface, the effects of anthropogenic disturbance, and ecological enhancement and restoration. The study area beyond SMMNRA offers many new opportunities for scientific understanding of biodiversity in a vast urban area, geology of the Transverse Ranges Province, paleontology and archeology.

The Santa Monica Mountains and the San Gabriel Mountains have a long history of research in geology, paleontology, and Mediterranean ecosystems. However, comparatively

few studies have been published on the natural and cultural resources of the Simi Hills, Santa Susana Mountains, and the Verdugo Mountains-San Rafael Hills. As a result, there is a high potential for scientific study to improve understanding of resource significance of these regions. Many of the lands proposed for boundary addition are likely to have undocumented archeological and paleontological resources that could lead to greater understanding about the people that lived in the region and the evolution of species over time. Including these areas within SMMNRA would provide new opportunities for NPS to conduct research and establish inventory and monitoring programs to inform efforts to protect significant resources.

SMMNRA Significance - Scenic Resources
Extending from Point Mugu to downtown Los Angeles, the rugged landscape and geologic features of the Santa Monica Mountains serve as an urban refuge and offer a variety of exceptional vistas from expansive ocean and mountain views and urban skylines to secluded canyons and miles of seashore.

The mountains and hills of the Rim of the Valley Corridor, all part of the Transverse Ranges Province, are largely undeveloped. Scenic vistas include rugged mountain landscapes, a wide range of interesting geologic features, lush canyons, waterfalls, and riparian areas. These areas provide a stark contrast to the urban valleys that lie within and provide a source of refuge for urban dwellers.

SMMNRA Significance - Filmmaking History
Santa Monica Mountains National Recreation Area's varied coastal and mountain landscapes, in close proximity to Hollywood, played a significant role in the film industry's transition from studio production to on-location filming, as represented by Paramount Ranch, one of the best remaining examples of an early movie ranch. These landscapes continue to provide backdrops for film production today.

Cultural resources within the study area outside of SMMNRA provide new opportunities to interpret significant places and events in film history expanding on this aspect of significance at SMMNRA. Learning about film history and experiencing the on-site filming that continues to take place in the Santa Monica Mountains is a significant attraction for visitors to SMMNRA. Given the broader region's significant role in television and movie production, there are numerous sites in and around the study area that provide opportunities to expand this area of significance. For example, just outside of the study area along the Los Angeles River in the San Fernando Valley is the CBS Studio Lot, one of the first motion picture studios established in the San Fernando Valley. The community of Newhall in the Santa Clarita Valley contains many notable Hollywood movie sets and is the site of the Walk of Western Stars. Griffith Park, in the eastern Santa Monica Mountains outside of SMMNRA, Beale's Cut (Santa Susana Mountains), and Ahmanson Ranch (Simi Hills) were also iconic film location sites. Griffith Park is notable for its long use for location filming.

The topic of filmmaking has the potential for focused research (such as through a national historic landmarks theme study) which could identify additional sites of significance related to filmmaking. These resources would expand and enhance the significance of SMMNRA as it relates to the theme "Expressing Cultural Values, Visual and Performing Arts."

Conclusion
Including nationally significant resources and functioning wildlife corridors (approximately 313,000 acres of land) within SMMNRA would ensure long-term protection of nationally significant resources related to the purpose of SMMNRA.

Protection of Park Resources and Fulfillment of Park Purpose

The greatest threats to nationally significant resources at SMMNRA include loss of habitat connectivity and long-term population viability for some plant and animal species as a result of urban development and road construction; conversion of oak woodlands, chaparral and coastal sage scrub communities (to nonnative grasslands) as a result of increased fire intervals and invasive species; and existing stressors on air and water resources. Urbanization also leads to large mammal injury and death through vehicle collisions and rodenticide poisoning. Threats to biodiversity associated with increasing urbanization and potential loss of habitat connectivity are some of the primary reasons why legislators directed the

NPS to conduct a special resource study of the Rim of the Valley Corridor area. Urbanization also threatens cultural and paleontological resources. Many portions of the study area with high potential for scientific study of archeological sites and fossil resources have not been surveyed or inventoried.

Maintaining SMMNRA's habitat value and high biodiversity will depend in part on functional habitat connectivity. This is well documented because the South Coast Ecoregion of California has experienced more science-based planning and study related to conservation planning and connectivity, largely due to its high biodiversity and level of habitat fragmentation and loss (Spencer et al. 2010). Two-thirds of the essential wildlife corridors identified by the California Essential Habitat Connectivity Project related to SMMNRA are vulnerable to land use change that could further reduce the connectivity value of the area (Stoms, Jantz and Davis 2013). Because the region is still growing – southern California is expected to add another 4 million residents by 2035 – additional land will be needed to accommodate this growth which could cause further encroachment on habitat (SCAG 2012).

A boundary adjustment that would include the Rim of the Valley Corridor areas would provide the widest range of tools to protect resources including authority to expend funds to inventory, monitor, and study resources as well as to directly protect land through acquisition. Partnership efforts at SMMNRA have demonstrated that NPS authority to conduct research, coordinate planning and management with partners, inventory and monitor resources, and expend funding on facilities, programs, and land acquisition has facilitated the protection of resources and public enjoyment opportunities offered in the Santa Monica Mountains. Since the establishment of SMMNRA in 1978, protected lands within the Santa Monica Mountains have increased from 22% to 52%. Today, roughly 80,000 acres of the land within the 153,250-acre SMMNRA are preserved by a range of public agencies for resource protection and/or public enjoyment.

Climate Change

A wide body of scientific evidence shows that the global climate is heating up at unprecedented rates threatening water supplies, habitat, air quality, and public health (Intergovernmental Panel on Climate Change 2007). Protecting the broader ecosystem setting associated with the Santa Monica Mountains will improve resiliency in the face of ecosystem stressors imposed by increasing temperatures. In the absence of this protection, it is likely that the potential effects of climate change would further exacerbate the impact of current threats to park resources. Climate modeling conducted for the region projects an increase of minimum winter temperatures of 2.1 – 2.8 degrees C in the Los Angeles area, while maximum summer temperatures are projected to increase by more than 4 degrees by 2100. As a result, fire frequency could increase 62-88% by the end of the century. The combination of large increases in temperature and relatively modest changes in precipitation can be expected to reduce the growth and recruitment of many plant species at SMMNRA. Greater fire frequency will make SMMNRA more sensitive to invasions of nonnative plants (Stoms, Jantz, and Davis 2013). Such threats could have a profound effect on the NPS' ability to protect significant park resources and fulfill the park purpose.

Enhanced protection of these areas and their connections to other significant habitat areas in the region may help to offset future habitat stressors from climate change. Protecting large landscapes and corridors through which plants and animals can move to such refugia, and assisting plants and animals in reestablishing themselves in new regions, may help conserve biodiversity.

Conclusion

Including study area resources in SMMNRA allows for greater protection of national recreation area resources and fulfillment of park purpose. Maintaining SMMNRA's habitat value and high biodiversity will depend in part on functional habitat connectivity and protection of the broader ecosystem. A boundary adjustment that would include the Rim of the Valley Corridor areas would provide the widest range of tools to maintain habitat connectivity and protect significant resources including authority to expend funds to inventory, monitor, and study resources, as well as to directly protect land through acquisition.

Agencies that currently cooperate with NPS in SMMNRA manage lands throughout the proposed boundary adjustment areas. Adding these lands to the SMMRA would expand the efficient cooperative management approaches that have been applied in the Santa Monica Mountains for over 30 years.

Feasibility to Administer the Lands Added through the Boundary Adjustment

Feasibility criteria for a new park unit and for a boundary adjustment to an existing national park unit are similar to those considered for a new national park unit. The following analysis is based on the context provided in the feasibility evaluation for a new national park unit (*Chapter 3*). For example, the feasibility analysis in *Chapter 3* contains detailed descriptions of land use and ownership. All recommendations for boundary changes must also meet the following criteria:

> *The added lands will be feasible to administer considering their: 1) size, configuration, and ownership; 2) costs; 3) the views of and impacts on local communities and surrounding jurisdictions; 4) and other factors such as the presence of hazardous substances or exotic species.*

Size, Configuration, and Ownership

Approximately 313,000 acres of land in the study area that are not already within the boundaries of SMMNRA or U.S. Forest Service managed areas contain nationally significant resources and provide for appropriate use and development to facilitate public enjoyment and achieve SMMNRA's purpose. The U.S. Forest Service managed areas would not need to be included this configuration, because the NPS and U.S. Forest Service have broad authority for cooperative management to achieve mutual objectives to protect resources and enhance public enjoyment opportunities.

Each of the subgeographic areas within the study area would provide opportunities to enhance protection of significant resources at SMMNRA and better achieve park purposes (*Table 4-1: SMMNRA Boundary Adjustment, Areas Eligible for Inclusion in SMMNRA*). Protection of adjacent wildlife corridors within the study area (Simi Hills, Conejo Mountain-Las Posas Hills, Verdugo and Santa Susana Mountains) would enhance long-term protection of SMMNRA's high biodiversity.

Congress recognized the need for protection of areas outside of the SMMNRA when it establishment of the Santa Monica Mountains Zone as part of the 1978 authorizing legislation (P.L. 95-625, 92 Stat. 3501, 3506, November 10, 1978). The Santa Monica Mountains Zone extends beyond the boundaries of the national recreation area and includes the entire Santa Monica Mountain range, incorporating Griffith Park and watershed and canyon slopes associated with the mountain range. Although local and state agencies are responsible for management of these areas, the Secretary of Interior is granting reviewing authority on projects involving federal funds, permits, and licenses that may affect the recreation area. The intent of this authority was to reduce downstream impacts on national recreation area resources when possible. A boundary adjustment including these lands would obviate the need for this authority, as it would provide the NPS with additional tools to assist in the protection of these areas.

Within these 313,000 acres, two boundary adjustment configurations are considered feasible additions to SMMNRA. *Chapter 5: Alternatives* explores these two different approaches to an SMMNRA boundary adjustment.

Urban Focused Boundary Adjustment

The first configuration (defined as alternative C in the chapter to follow) would expand the national recreation area to the north and the east, focusing resources in more urban areas, where there is a greater need for recreational opportunities and access to open space. Areas added to SMMNRA would include portions of the Santa Monica Mountain range outside of the existing park boundary, the Los Angeles River and Arroyo Seco corridors, portions of the Simi Hills and Santa Susana Mountains, and the Verdugo Mountains, comprising an area of approximately 173,000 acres. This boundary adjustment would best meet SMMNRA's legislative purpose to provide recreational and public enjoyment opportunities to residents of and visitors to the greater Los Angeles Metropolitan Area.

Including these areas in SMMNRA would also provide opportunities to connect open space and habitat between the Santa Monica and San Gabriel mountains. The convergence of coastal, montane, and desert influences in areas proposed for addition in alternative C support a variety of significant biological resources. This configuration would also include rich array of nationally significant historic re-

Table 4-1: SMMNRA Boundary Adjustment, Areas Eligible for Inclusion in SMMNRA

Subgeographic Area	Nationally Significant Resources Related to SMMNRA's Purpose	Public Enjoyment Opportunities Related to Park Purpose	Appx. Acreage
Arroyo Seco	Contains areas of high biodiversity including alluvial fan sage scrub, oak and walnut woodlands, and remnant riparian areas that facilitate wildlife movement providing nodal connectivity for wildlife between the Santa Monica Mountains, Verdugo Hills, Elysian Hills, and San Gabriel Mountains.	Contains resources related to the rich and diverse heritage of southern California. Provides new opportunities for the NPS to reach out to communities in the most densely populated areas of the region.	4,500
Conejo Mountain-Las Posas Hills	Contains wildlife corridors essential for sustaining biodiversity in the Santa Monica Mountains. Conejo volcanic soils support high levels of rare and endemic species that contribute to regional biodiversity. Scenic areas include rugged mountain landscapes.	Contains scenic mountains and hillsides and numerous protected recreation areas from large open spaces such as Wildwood Park and Conejo Canyons to small neighborhood parks. Provides new opportunities for the NPS to reach out to communities west of Calleguas Creek such as Camarillo, Port Hueneme, and Oxnard that have comparatively less access to parks and open spaces.	40,100
Santa Monica Mountains (outside existing SMMNRA)	Contains areas of high biodiversity including: high quality riparian habitat, such as white alder riparian woodland and forest, and California bay forest found in Griffith Park; and chaparral vegetation types that would enhance the quantity of this resource already found in SMMNRA. Provides opportunities to expand preservation of sites related to the history of filmmaking (e.g. Griffith Park).	Provides new opportunities for the NPS to reach out to communities in the most densely populated areas of the region. New opportunities exist for interpretive and educational programming related to the history of Los Angeles and filmmaking.	53,200
Los Angeles River	Contains resources related to the rich and diverse heritage of southern California. The river corridor also contains remnant riparian areas. Recent restoration studies and efforts provide the potential to restore habitat along the river corridor. This habitat facilitates wildlife movement providing nodal connectivity for wildlife between the Santa Monica Mountains, Verdugo Hills, Elysian Hills, and San Gabriel Mountains.	Offers exceptional opportunities to provide public enjoyment to area residents that currently lack adequate access to parks and open space. Inclusion in SMMNRA supports recent NPS efforts to conduct outreach efforts and programs in Los Angeles.	8,400 (2,600 within study area and 5,800 acres of river corridor in the San Fernando Valley)
San Gabriel Mountain Foothills	Contains areas of high biodiversity including: high quality riparian habitat; alluvial fan vegetation; and a wide diversity of chaparral communities. Scenic areas include rugged mountain landscapes, a wide range of interesting geologic features, lush canyons, waterfalls, and riparian areas.	The San Gabriel Mountain foothills feature many locally managed park and recreation areas ranging from large open spaces and wilderness parks to local community parks. Provides new opportunities for the NPS to reach out to communities in the densely populated areas of the San Gabriel Valley.	20,300
Santa Susana Mountains	Contains wildlife corridors essential for sustaining biodiversity in the Santa Monica Mountains. Contains areas of high biodiversity including: ancient relict plant communities (e.g. bigcone Douglas-fir and canyon live oak) communities at their northern or southernmost limits (e.g. valley oak savanna). Scenic areas include rugged mountain landscapes, rolling woodlands, lush canyons, and riparian areas.	Within the Santa Susana Mountains large open spaces with highly scenic landscapes and provides exceptional recreational opportunities including biking, hiking and equestrian opportunities. Opportunities exist to link open spaces and trail systems to improve recreational opportunities and access.	80,600

Table 4-1: SMMNRA Boundary Adjustment, Areas Eligible for Inclusion in SMMNRA (continued)

Subgeographic Area	Nationally Significant Resources Related to SMMNRA's Purpose	Public Enjoyment Opportunities Related to Park Purpose	Appx. Acreage
Simi Hills (outside SMMNRA)	Contains wildlife corridors essential for sustaining biodiversity in the Santa Monica Mountains. Supports high biodiversity and an excellent example of native grassland. Contains prehistoric archeological sites related to the archeological significance of the Santa Monica Mountains.	Provides excellent opportunities to expand recreational opportunities and connections in the greater Simi Hills. Rich in both cultural and natural resources, the Simi Hills offer a variety of opportunities to interpret prehistoric use of the area.	45,700
Upper Santa Clara River Area	Contains areas of high biodiversity including: high quality riparian habitat, alluvial fan vegetation, and harbors the more sensitive plant community types related to riparian / riverine areas than any other portion of the study area.	Provides opportunities to expand regional recreational opportunities and trail connections.	36,500
Verdugo Mountains- San Rafael Hills	Area of high biodiversity that supports genetic interchange between otherwise isolated populations of plant species.	Provides opportunities to expand regional recreational opportunities and connections to residents of the densely populated San Gabriel and San Fernando valleys.	24,000
Total Acreage			***313,300***

sources which are concentrated in the eastern portions of the study area. Considerable public enjoyment opportunities could be provided by adding the Los Angeles River and Arroyo Seco corridors, the Verdugo Mountains-San Rafael Hills, and areas in the broader Santa Monica Mountains.

Large Landscape Conservation Boundary Adjustment

The second configuration (defined as alternative D in the chapter to follow) would include all 313,000 acres determined eligible for inclusion in SMMNRA and therefore would provide greater inclusion of nationally significant resources and important regional wildlife corridors that support the area's high biodiversity. This boundary adjustment would provide the most opportunities for direct conservation of large areas of open space with high quality habitat in areas such as the Santa Susana Mountains, the Simi Hills, and Conejo Mountain-Las Posas Hills areas.

Ownership

As described in the feasibility analysis for a new park unit in *Chapter 3*, land use, ownership, and regulatory authorities within the study area are quite diverse ranging from large, undeveloped natural areas to dense urban corridors. Given the complexity of land use and ownership within the study area, a boundary adjustment to include additional areas within SMMNRA would be feasible using a collaborative management approach that retains existing ownership patterns and regulatory authorities as exemplified by current SMMNRA management.

While some of the lands in the study area are protected for conservation and recreation by other land management agencies and conservation organizations, inclusion of additional areas in the SMMNRA boundary would provide the opportunity for interagency coordination to achieve recreation and conservation goals and would provide the NPS with the authority to more fully invest in conservation, planning, and public enjoyment of the area. The NPS could also enter into cooperative management agreements with existing agencies and seek funds for land acquisition from willing sellers. A land protection plan would help set priorities for NPS land protection within the boundary adjustment area. However, given the number of parcels that would be included in the boundary adjustment the land protection plan could be complex and challenging to update on a regular basis.

Costs Associated with Operation, Acquisition, Development, and Restoration

Operational Costs

Operational costs of national park units vary widely, depending on the amount and type of resources managed, number of visitors, level of programs offered, and many other factors. *Chapter 5: Alternatives*, explores potential operational costs in more detail for each management alternative considered in this special resource study. Annual costs for a boundary expansion including portions of the Rim of the Valley Corridor outside of the Angeles National Forest (over 300,000 acres) to protect significant resources, conserve wildlife corridors, and provide new opportunities for public enjoyment could range from $1 to $3.5 million over the existing annual operating budget for SMMNRA ($8.6 million in FY2012). The urban focused boundary adjustment would cost less than the large landscape conservation boundary adjustment configuration. However, the costs of each boundary adjustment configuration would largely depend on the management emphasis identified through implementation plans. Costs would primarily cover additional staffing to provide increased technical assistance to area communities for resource management and recreation planning, law enforcement, maintenance, and outreach and interpretive programs.

Given the close proximity of the study area to more than 18 million residents, and the significantly high concentration of biodiversity and cultural resources that would be protected, the NPS would be able to achieve a high level of resource protection and public enjoyment opportunities for relatively little additional investment in annual operational costs.

Land Acquisition Costs

As described in the "Feasibility" section of *Chapter 3,* land acquisition costs cannot be estimated without more specific proposals for land acquisition. NPS funds for land acquisition are currently very limited, and proposed acquisitions compete for national funds with many other worthy sites. Given the high cost of land in Los Angeles and Ventura counties land acquisition would be limited and strategic. Over the past thirty years, SMMNRA has purchased land in this manner. Priorities for land acquisition would be identified in a land protection plan which establishes a range of land conservation approaches in addition to direct land acquisition. Subject to available funds and consistent with prior land acquisition efforts at SMMNRA, the NPS would likely consider land acquisition or land management in specific areas with significant resources or public enjoyment opportunities related to park purpose, and where there are interested willing sellers.

Collaborative management between the NPS and other land management agencies provides more advantages for obtaining land acquisition funding, a highly competitive process that requires considerable public and political support. Funding could also be obtained from multiple sources over time for priority lands as those areas become available for acquisition.

Overall costs for land acquisition would likely be higher for the large landscape conservation boundary adjustment area than the urban focused boundary adjustment area because the larger area includes more lands suitable for conservation through land acquisition.

Development Costs

Development costs for NPS units vary widely, depending on the types of existing and desired conditions and facilities. For the newly added areas, the NPS would invest funds to inventory and document park resources, for developing management or treatment plans and educational/interpretive materials for these resources, and for developing or improving facilities for visitors and for park operations. Specific costs would be dependent on management priorities and approaches identified through implementation planning and the location, size, and configuration of future land acquisition. Through cooperative management agreements, the NPS could also share facilities with existing agencies or share costs for new facilities as deemed necessary. Park office space already exists at SMMNRA headquarters and at several other sites in the area. Opportunities exist to share or lease additional space with partner agencies to accommodate to new positions that would support planning and management activities in the boundary adjustment area.

The urban focused boundary adjustment area contains more lands already protected for recreation and conservation; therefore, NPS funds might be more focused on interpretive programming and capital expenditures to expand/connect trail systems. The recent passage of a state bond measure by the California legislature to support conservation and recreation along the Los Angeles River would also supplement river conservation efforts and may result in new recreational opportunities where such efforts can provide multiple benefits (e.g. riverside parks that contain restored habitat and planted areas to remove silt and pollution from surface runoff water).

Conclusion - Costs

The NPS finds that operational costs for a boundary adjustment to the boundary of SMMNRA are feasible using the existing collaborative partnership-based park model exemplified by SMMNRA. Given the close proximity of the study area to more than 18 million residents, and the significantly high concentration of biodiversity and cultural resources that would be protected, the NPS would be able to achieve a high level of resource protection and public enjoyment opportunities for relatively little additional investment in annual operational costs. With the high cost of land in Los Angeles and Ventura counties, limited, strategic land acquisition would be feasible. Land acquisition would only be considered where landowners have expressed interest in selling. Costs for development would be dependent on management priorities and approaches identified through implementation planning and the location, size, and configuration of future land acquisition.

Impacts on Local Communities and Surrounding Jurisdictions

The social and economic impacts of a boundary adjustment to SMMNRA would largely be similar to the impacts described in *Chapter 3*, under the potential impacts of a new national park unit. Expansion of SMMNRA would likely have a wide range of economic and social impacts on the area. Most impacts would likely be beneficial. In FY 2011, SMMNRA generated 242 jobs and $9 million in labor income. Visitor spending for FY 2011 was $26.2 billion, of which $17.2 billion came from non-local visitors (NPS 2013e).

Socioeconomic concerns identified during the public scoping process included requests for evaluating potential impacts to property values and the local economy, as well as potential effects on local regulatory authorities within and adjacent to the proposed area. As in the current SMMNRA boundary, for the boundary expansion areas each partner and jurisdiction would typically continue to retain land ownership, management, and decision-making authority for lands that they own. The Organic Act of 1916, which established the National Park Service, gives the Secretary of the Interior broad authority to establish regulations pertaining to other lands within authorized national park unit boundaries. Such regulations are found in 36 Code of Federal Regulations (CFR) Chapter 1. In SMMNRA, most NPS land management policies and regulations apply to lands owned by the NPS. However, exceptions are regulations pertaining to solid waste facilities, mineral extraction, and exercise of nonfederal oil and gas rights.

The regulation of solid waste disposal sites is required by 36 CFR Chapter 1, Part 6. These regulations prohibit the operation of any solid waste disposal site, except as specifically provided for, and govern the continued use of any existing solid waste disposal site within the boundaries of any unit of the national park system. For example, within SMMNRA, the Sanitation Districts of Los Angeles County obtains a permit from NPS to operate the Calabasas landfill in Agoura Hills.

Although mineral extraction activities currently do not take place in the existing SMMNRA boundary, NPS regulations pertaining to mineral exploration and development may apply to boundary adjustment areas where prospective operators hold mineral interests, unless or until these interests are purchased by the U.S. government. The purpose of NPS regulations is to implement the NPS Organic Act of 1916 by providing for reasonable protection of park resources and values that may be affected by the exercise of the mineral interests.

The extent to which such regulations would affect land uses would be dependent on what is specified in authorizing legislation, and the nature of the activities. Legislation would be required to expand the boundary of SMMN-

RA. It should be noted that through any resulting legislation, Congress can make determinations about uses and regulations within a specific park unit. For example, some national recreation areas are open to mineral leasing if specified resource protection and administrative objectives can be met. Congress would also specify which areas would be included or excluded.

Privately held lands would continue to be regulated by local land use authorities (cities and counties). If local development proposals have the potential to impact park resources SMMNRA staff will provide comments on such projects. Local jurisdictions could choose to use such comments to mitigate or limit the effects of development on SMMNRA resources. Land use planners frequently have the ability to direct the intensity or location of the development toward more durable areas and away from sensitive resources and/or to require setbacks or open space as part of development projects. Additional information on regulations related to mineral extraction and an assessment of land use and social and economic impacts related to these regulations is provided in the evaluation of land use impacts in *Chapter 6: Environmental Consequences*.

Potential Threats – Other Factors Such as the Presence of Hazardous Substances or Exotic Species

Existing resource degradation and threats to resources are described in *Chapter 3*. Urban development and increased fire frequency make native vegetation more vulnerable to invasion by nonnative species. The most vulnerable locations in SMMNRA include areas along roads and trails and disturbed landscapes. In SMMNRA, nonnative plant colonization is also more prevalent in grasslands and riparian areas compared to coastal sage scrub and chaparral communities (Stoms et al. 2012).

Impacts from climate change may increase or extend droughts, threatening area water supply, including for wildlife. Rising temperatures and altered rainfall may cause additional stress on native habitat and increase air pollution. Such changes could cause native and endemic plants to move northward and/or toward the coast, following the shifts in their preferred climate. Native and endemic plants in southern California could move higher in elevation into cooler but highly vulnerable refugia. For example, the San Gabriel Mountains are predicted to be an area for native plants and animals seeking refuge as climate change begins to impact their habitat (Loarie et. al. 2008). Enhanced protection of these areas and their connections to other significant habitat areas in the region may help to offset future habitat stressors from climate change. Protecting large landscapes and corridors through which plants and animals can move to such refugia, and assisting plants and animals in reestablishing themselves in new regions, may help conserve biodiversity.

Threats from environmental contamination of specific parcels are likely to be found in some portions of the study area given the diversity of land uses. For example, the Santa Susana Field Laboratory located near the crest of the Simi Hills at the western border of the San Fernando Valley is the site of a former rocket engine test and nuclear research facility. The 2,849-acre field laboratory is currently the focus of a comprehensive environmental investigation and cleanup program, conducted by Boeing, the U.S. Department of Energy and the National Aeronautics and Space Administration (NASA), and overseen by the Department of Toxic Substances Control. Given the thousands of parcels of land that exist throughout the study area, parcel level evaluation of specific environmental contamination is not within the scope of this study. Any land acquisition would be dependent on future assessment to determine whether proposed acquisitions would meet NPS and Department of the Interior standards.

The Department of the Interior discourages acquisition of property contaminated with hazardous substances. Further, this policy states that contaminated lands should not be acquired unless otherwise directed by Congress, court order, or as determined by the Secretary of the Interior. Any property under consideration for NPS acquisition would therefore be assessed for environmental contaminants. If contamination exists, further evaluation would take place to determine the feasibility of managing the land given the potential transfer of liability and costs for remediation and/or restoration

Table 4-2: Feasibility Factors (Boundary Adjustment to SMMRNA) - Summary of Findings

Criteria	Findings
Size, configuration, and ownership	Yes. Approximately 313,000 acres of land in the study area that are not already within the boundaries of SMMNRA or the Angeles National Forest contain nationally significant resources and provide for appropriate use and development to facilitate public enjoyment. Resources within these lands would expand and enhance the significance of SMMNRA. Within the 313,000 acres, two boundary adjustment configurations are considered feasible, one focuses on a portion of the area in the most densely populated areas of the study area (173,000 acres) focusing resources near urban areas where recreational opportunities are most deficient, the other configuration includes all areas eligible for a boundary adjustment (313,000 acres), providing the broadest array of tools to protect the broader landscape including regional wildlife corridors. Protection of adjacent wildlife corridors within the study area would enhance long-term protection of SMMNRA's high biodiversity. Considerable public enjoyment opportunities could be provided by adding the Los Angeles River and Arroyo Seco corridors, Verdugo Mountains-San Rafael Hills, and additional areas of the Santa Monica Mountains to SMMNRA. Such opportunities would enhance SMMNRA's ability to achieve its park purpose of providing public enjoyment opportunities for the greater Los Angeles metropolitan area. The study area includes a diverse array of land uses from large, undeveloped natural areas to dense urban corridors. Land ownership is also complex. Many federal, state, and local agencies and private landowners own and manage land within the study area. Cooperative/collaborative management as exemplified at SMMNRA would be a feasible NPS management approach given the complex land use and ownership patterns within the study area.
Costs associated with acquisition, development, restoration and operation	Yes. The NPS finds that costs associated with an adjustment to the boundary of SMMNRA is feasible using the collaborative partnership-based park model exemplified by SMMNRA. Through a boundary adjustment, the NPS would have enhanced opportunities for collaborative management with local, state and federal managers to protect natural and cultural resources, provide recreation, and offer interpretive and educational programs. Given the high cost of land in Los Angeles and Ventura counties, acquisition of limited, strategic sites and resources would likely be most feasible. Land acquisition would only be considered where there are willing sellers.
Impacts on local communities and surrounding jurisdictions.	Yes. The social and economic impacts appear to be largely beneficial. The establishment of a new national park unit in the study area would not necessarily establish new regulatory or land use authority over local governments or private lands within the boundary.
Potential Threats – Other factors Such as the Presence of Hazardous Substances or Exotic Species	Yes. Despite existing resource impacts and threats from urbanization and development, approximately 84% of the study area contains protected or unprotected undeveloped lands. A large portion of this area encompasses significant resources of high integrity. Although certain areas of the study area are degraded or threatened by degradation, opportunities exist to improve these areas through collaborative restoration efforts.

Despite existing resource impacts and threats from urbanization and development, approximately 84% of the study area contains protected or unprotected undeveloped lands, which contain, or have the potential to contain, significant resources of high integrity. Because some areas of the study area have resource degradation or threats that would preclude direct NPS management, these areas might not be considered for NPS land acquisition should they be included in a boundary adjustment to SMMNRA. However, some degraded areas, such as the Los Angeles River, offer excellent opportunities to improve these areas through collaborative restoration efforts.

Overall Feasibility Conclusion (Boundary Adjustment Evaluation)

An adjustment to the boundary of SMMNRA is feasible using the existing collaborative partnership-based management model exemplified by SMMNRA, which respects the complex mix of existing land use, ownership, and regulatory authorities (*Table 4-2: Feasibility Factors (Boundary Adjustment to SMMRNA) - Summary of Findings*). Many of the significant resources within the study area augment the national significance of SMMNRA and provide habitat connectivity essential for long-term preservation of the significant resources within the Santa Monica Mountains, thus warranting physical connection to the SMMNRA boundary and a seamless interagency management approach.

The NPS finds that operational costs for a boundary adjustment to the boundary of SMMNRA are feasible. Given the close proximity of the study area to more than 18 million residents, and the significantly high concentration of biodiversity and cultural resources that would be protected, the NPS would be able to achieve a high level of resource protection and public enjoyment opportunities for relatively little additional investment in annual operational costs. Given the high cost of land in Los

Table 4-3: NPS Tools and Authorities – Within Park Boundaries and in the Broader Region

National Park Service Authorities	Within NPS Boundary	Areas Beyond NPS Boundary
NPS direct land management*	X	
NPS funding and authority for land acquisition*	X	
NPS funding and authority for capital improvements such as trails, roads, and other facilities to support public enjoyment	X	
NPS funding for inventory and monitoring programs	X	
NPS cooperative conservation and recreation planning	X	X
NPS technical assistance for resource protection and recreation planning	X	X
NPS interpretive and educational programs	X	X
NPS cooperative agreements and interagency partnerships to protect natural resources (Service First Agreements, Executive Order 13552, Natural Resources Consolidated Act of 2008).	X	X
NPS ability to contribute financially to projects that protect wetlands, watersheds, and coastal resources if they benefit park resources (Consolidated Resources Act of 2008, Section 301). Financial contributions may not include land acquisition, regulatory authority, or infrastructure improvements.	X	X

* *Note: NPS* Management Policies 2006 *and NPS regulatory authorities typically only apply to lands under NPS ownership. Land acquisition authority is restricted to authorized boundaries.*

Angeles and Ventura counties, limited, strategic land acquisition would be feasible. Land acquisition would only be considered where landowners have expressed interest in selling. Costs for development would be dependent on management priorities and approaches identified through implementation planning and the location, size, and configuration of future land acquisition.

Socioeconomic impacts on local communities would largely be beneficial. The addition of new areas to SMMNRA would not necessarily establish new regulatory or land use authority over local governments or private lands within the boundary.

Despite existing resource impacts and threats from urbanization and development, approximately 84% of the study area contains protected or unprotected undeveloped lands, which contain, or have the potential to contain, significant resources of high integrity. Some degraded areas, such as the Los Angeles River, offer excellent opportunities to improve these areas through collaborative restoration efforts.

Protection Alternatives Considered

The final criterion to evaluate eligibility of a boundary adjustment is a determination of whether other alternatives for management and resource protection are not adequate. *Chapter 5: Alternatives*, explores four alternatives that examine protection of the study area, two of which are boundary adjustments to SMMNRA (alternatives C and D). Other alternatives considered are: 1) a no action alternative (alternative A) that evaluates protection under current conditions and trends; and 2) Cooperative Conservation Partnership (alternative B) which would authorize and direct SMMNRA to facilitate the development of a cooperative conservation plan to identify shared goals for resource protection and public enjoyment in the Rim of the Valley Corridor area beyond SMMNRA.

Existing efforts underway in alternative A would continue to result in land protection efforts throughout the study area by NPS and other agencies. However, the degree to which NPS could engage in conservation of regional wildlife corridors and outreach efforts to urban communities would be limited by its existing authorities to work beyond the national recreation area boundary. *Table 4-3: NPS Tools and Authorities – Within Park Boundaries and in the Broader Region* provides a comparison of NPS authorities as they apply to areas within an NPS boundary and to areas beyond.

New partnership opportunities proposed in alternative B would achieve a greater level of protection for significant resources and

regional wildlife corridors over alternative A. Completion of a regional conservation plans as recommended in alternative B may result in the establishment of new parks and conservation of open spaces by local and state agencies outside of SMMNRA. Alternative B would also facilitate a greater technical assistance role for the NPS in the protection of resources and establishment of new recreational opportunities. Technical assistance could be provided for research efforts, restoration projects, trail planning, and interpretive and educational programming. However, NPS authorities, tools and resources outside of the SMMNRA boundary would continue to be restricted primarily to technical assistance, partnership efforts with other agencies, and educational programs.

Despite the advantage of expanded authorities and technical assistance opportunities explored in alternative B, a boundary adjustment in the study area would provide greater opportunities for land protection and new visitor opportunities. The boundary adjustment would give the NPS the authority to expend funds for land acquisition and capital improvements such as trail development and other facilities that would support public enjoyment of the area's resources. Additionally, the NPS could apply its current cooperative management agreement with California State Parks, the Santa Monica Mountains Conservancy, and the Mountains and Recreation Conservation Authority to areas outside of SMMNRA in the Rim of the Valley Corridor, expanding the efficient cooperative management approaches that have been applied in the Santa Monica Mountains for over 30 years. Given the complexity of ownership and management, high cost of land acquisition, and demands of a growing metropolitan region, having multiple agencies working in partnership has been necessary to leverage adequate resources for land protection. Since the national recreation area's establishment in 1978, public lands within SMMNRA have increased from 22% to 52%.

Although current conditions (alternative A) and additional tools and resources for regional cooperation (alternative B) would contribute to the long-term protection of SMMNRA, these alternatives would be less adequate than a boundary adjustment which would provide NPS with the full range of protection tools and authorities to protect significant resources and provide public enjoyment opportunities.

Expansion of SMMNRA Significance

In addition to furthering the purpose of Santa Monica Mountains National Recreation Area (SMMNRA), the areas eligible for addition to SMMNRA also contain resources that would expand the national recreation area's significance. As described in the suitability evaluation in *Chapter 3*, the study area contains nationally significant resources that are not currently represented in the national park system. This includes a diversity of geologic and paleontological resources that are distinct from the resources of SMMNRA. Additionally, the numerous historic sites which are listed or eligible for listing in the National Register of Historic Places provide an opportunity to interpret a wide range of historical themes.

The eastern Santa Monica Mountains outside of SMMNRA contain many examples of nationally and regionally significant architecture. Most notable are the resources associated with the Case Study House Program which was significant in the nation for its concerted efforts to introduce Modern domestic architecture the broader public after World War II. The specific stories and subthemes represented by the Case Study House Program are distinct from those already represented in the national park system and SMMNRA specifically.

The Santa Susana Mountains were the location for the birth of the oil industry in southern California. Well No.4, Pico Canyon Oil Field National Historic Landmark, the first commercially successful oil well on the west coast of the United States. Pico Well No. 4 embodies a distinct aspect of American history not reflected in the national park system and the protected natural landscape surrounding Pico Well No. 4 NHL provides site context that is similar to the historic landscape during the period of significance, providing a rare opportunity for visitors to experience these resources in an environment similar to that of the 1880s.

Resources in the Santa Susana Mountains would also add to the diversity of rock forma-

tions and mountain ranges that illustrate and interpret the story of the Transverse Ranges. The Chatsworth, Towsley, and Las Virgenes formations in the study area would expand the significance of SMMNRA by representing fossil resources not found within SMMNRA.

The *San Gabriel Watershed and Mountains Special Resource Study* (NPS 2013f) concluded that the overall combination of cultural and natural resource values and themes represented by the San Gabriel Mountains and foothills is not comparable to any other national park unit or comparably managed area. Represented within these themes are unique geological features and dramatic geologic processes, a wide diversity of rare habitats located in close proximity given the dramatic changes in topography, and technological advances in the areas of astronomy, chaparral ecosystems and watersheds. The Upper Santa Clara River area examined in the *San Gabriel Study* also contains fossiliferous formations that are not represented in SMMNRA, including the Tick Canyon and Mint Canyon formations, adding to the diversity of fossil species already present in SMMNRA.

The Arroyo Seco corridor reflects an unusually high quantity and density of sites listed in the National Register of Historic Places, many of which have thematic connections to the area's national historic landmarks which include the Gamble House National Historic Landmark, the Rose Bowl National Historic Landmark, the Twenty-five Foot Space Simulator National Historic Landmark and the Space Flight Operations Facility National Historic Landmark. These resources represent themes that are not fully represented in the national park system including the Cold War and space exploration as well as outstanding examples of regional architecture associated with the Arts and Crafts Movement. The 8.2-mile Arroyo Seco Parkway is listed in the National Register of Historic Places as an historic district for its significance as the first freeway (a grade separated, limited-access, high-speed divided road) in the western U.S. The Arroyo Seco Parkway is also designated a National Historic Civil Engineering Landmark by the American Society of Civil Engineers (ASCE). In 2002, the Arroyo Seco was designated a National Scenic Byway by the Federal Highway Administration. The Arroyo Seco corridor also includes a segment of Route 66.

Areas of potential national significance in the study area provide opportunities to interpret new aspects of history. These resources would need further evaluation to determine national significance. For example, the study area contains a wide range of resources that reflect efforts to store and transport water from the original water systems that supplied El Pueblo de Los Angeles to key components of the California Aqueduct, and numerous dams and reservoirs created for water storage. Portions of the Los Angeles Aqueduct and associated infrastructure that carry and store water from the Owens Valley are also located throughout the study area. Potentially significant sites in the study area related to water conveyance include the Zanja Madre, Crystal Springs, Owensmouth Cascades, Mulholland Dam and Hollywood Reservoir, Lower Franklin Dam, Stone Canyon Dam and Encino Reservoir. Should these resources be found to be nationally significant, they would contribute to expanding the significance of SMMNRA as it relates to the theme "Transforming the Environment."

The Los Angeles River corridor contains potentially significant resources related to the themes of "Manipulating the Environment and Its Resources" as reflected in the water conveyance and flood protection systems associated with the Los Angeles River, and "Protecting and Preserving the Environment," as related to efforts to enhance and restore the river.

Although Cold War and space exploration-related sites within the study area have not yet been assessed for national historic landmark eligibility, they have the potential to be found nationally significant. Should these resources be found to meet national historic landmark criteria, the Santa Susana Field Laboratory and other Cold War-related resources in the study area would expand the significance of SMMNRA by representing themes not fully reflected in the national recreation area or the broader national park system.

Overall Conclusion - Boundary Adjustment Evaluation

The study finds that resources within the Rim of the Valley Corridor meet the criteria for addition to the boundary of Santa Monica Mountains National Recreation Area (SMMNRA).

Protect significant resources and values, or to enhance opportunities for public enjoyment related to park purposes

The study finds that the addition of lands in the study area to SMMNRA would enhance protection of significant resources and expand opportunities for public enjoyment related to the purpose of SMMNRA. Areas eligible for addition to SMMNRA (approximately 313,000 acres of land) include: habitat types that contribute to the high biodiversity of the Santa Monica Mountains; functioning wildlife corridors; highly scenic landscapes; and archeological sites. Eligible areas also include thousands of acres of open space and recreation areas, miles of trails, hundreds of sites of historical value, and national historic trails which provide exceptional public enjoyment opportunities. Expanding SMMNRA to the east into the City of Los Angeles would provide new opportunities for the NPS to reach out to communities in some of the most ethnically diverse and densely populated areas in the United States.

Otherwise protect park resources that are critical to fulfilling park purposes

Including study area resources in SMMNRA allows for greater protection of national recreation area resources and fulfillment of park purpose. Maintaining SMMNRA's habitat value and high biodiversity will depend in part on functional habitat connectivity and protection of the broader ecosystem. A boundary adjustment that would include the Rim of the Valley Corridor areas would provide the widest range of tools to maintain habitat connectivity and protect significant resources including authority to expend funds to inventory, monitor, and study resources, as well as protection through land acquisition.

Feasibility to Administer Lands Added through the Boundary Adjustment

Added lands must be feasible to administer considering their size, configuration, and ownership; costs; the views of and impacts on local communities and surrounding jurisdictions; and other factors. Lands eligible for inclusion in SMMNRA include approximately 313,000 acres of land in the study area and along the Los Angeles River that are not already within the boundaries of SMMNRA. Eligible areas include the Santa Monica Mountains outside of the current boundary, the Arroyo Seco and Los Angeles River corridors, the San Gabriel Foothills, the Upper Santa Clara River corridor, portions of the Santa Susana Mountains and Simi Hills, and the Conejo-Las Posas Hills. These areas contain nationally significant resources and provide for appropriate use and development to facilitate public enjoyment related to park purpose. Areas determined ineligible for inclusion in a boundary adjustment include lands within the San Gabriel Mountains that are currently managed by the U.S. Forest Service.

Within these 313,000 acres, two boundary adjustment configurations are considered feasible additions to SMMNRA. Chapter 5, Alternatives, explores these two different approaches to a SMMNRA boundary adjustment. The first configuration (defined as alternative C) would expand the national recreation area to include 173,000 acres to the north and the east, focusing resources in more urban areas, where there is a greater need for recreational opportunities and access to open space. The second configuration (defined as alternative D) would include all 313,000 acres determined eligible for inclusion in SMMNRA and therefore would provide greater inclusion of nationally significant resources and important regional wildlife corridors that support the area's high biodiversity.

The cost of an addition to the boundary of SMMNRA is feasible using the existing collaborative partnership-based management model exemplified by SMMNRA, which respects and builds upon the complex mix of existing land

use, ownership, and regulatory authorities. A boundary adjustment would enhance opportunities for collaborative management with local, state, and federal managers to protect natural and cultural resources and provide recreation, public access, and other compatible uses. Given the high cost of land in Los Angeles and Ventura counties, acquisition of priority sites and resources would likely be most feasible. Land acquisition would only be considered where there are willing sellers.

The social and economic impacts of a boundary adjustment appear to be largely beneficial. The addition of new areas to SMMNRA would not necessarily establish new regulatory or land use authority over local governments or private lands within the boundary.

Adequacy of Protection Alternatives Considered

This report determines that a boundary adjustment would provide the greatest opportunity for protection of resources related to SMMNRA's purpose when compared to other protection alternatives evaluated in the draft study report. Although other agencies and organizations would provide some level of protection under current conditions (alternative A) and additional NPS tools and resources for regional cooperation (alternative B) would contribute to the long-term protection of SMMNRA, a boundary adjustment would provide NPS with the fullest range of conservation tools and authorities to protect significant resources and provide public enjoyment opportunities. These tools and authorities include direct land conservation by the NPS to protect the broader ecosystem and funding to provide facilities that support recreation and public enjoyment.

Broadening the NPS' ability to partner beyond the current SMMNRA authorized boundary would expand the efficient cooperative management approaches that have been applied in the Santa Monica Mountains for over 30 years. The NPS would be able to expand its current cooperative management agreement with California State Parks, the Santa Monica Mountains Conservancy, and the Mountains and Recreation Conservation Authority, thus allowing for new visitor opportunities, scientific research and study, and coordinated management of essential wildlife corridors. Given the complexity of ownership and management, high cost of land acquisition, and demands of a growing metropolitan region, having multiple agencies working in partnership has been necessary to leverage adequate resources for land protection.







Top left: Science education program at Santa Monica Mountains National Recreation Area. Top right: Catalina mariposa lily. Bottom photo: Interface between development and open space at Laskey Mesa. Photos: NPS.

5 ALTERNATIVES

Chapter 5: Alternatives

This chapter describes the range of management alternatives analyzed in the study.

Introduction

The alternatives described in this chapter explore a range of possible actions for protection of nationally significant resources and creation of recreational and educational opportunities for the Rim of the Valley Corridor study area and broader Los Angeles region. The alternatives describe opportunities for National Park Service (NPS) land management, technical assistance, partnerships, resource protection, and interpretive and educational programming. The alternatives were developed in cooperation with multiple land management agencies after an analysis of public scoping comments and significant resources.

The purpose of the study is to provide information to aid Congress, the U.S. Department of the Interior, and the NPS in determining feasible and appropriate roles for the NPS within the Rim of the Valley Corridor study area (study area). Therefore, implementation of any of the alternatives explored would require action from Congress and/or further planning by the NPS and other agencies, organizations, or individuals.

Purpose and Need

The legislation authorizing the Rim of the Valley Corridor Special Resource Study directs the NPS to evaluate: (1) the suitability and feasibility of designating all or a portion of the corridor as a unit of Santa Monica Mountains National Recreation Area (SMMNRA); and (2) the methods and means for the protection and interpretation of this corridor by the NPS, other federal, state, or local government entities or private or non-profit organizations.

The alternatives explore ways to meet study objectives and opportunities to address primary issues identified by public and stakeholder scoping comments, provide long-term protection of nationally significant resources, and meet important objectives for the next century of NPS management, as identified through the NPS Call to Action initiative (NPS 2012a). The "Purpose and Need" section in *Chapter 1: Introduction* fully describes issues that define the primary need for this study, both in legislative testimony and through public scoping comments. These issues include:

- **Protection of Nationally Significant Resources.** The study identifies nationally significant natural and cultural resources in need of protection in the study area.
- **Habitat Fragmentation and Loss of Open Space.** Perhaps the greatest threat to the protection of the nationally significant natural resources in SMMNRA is the loss of habitat connections to other large protected areas.
- **Preservation of Recreational Opportunities and Access to Open Space.** Regional population growth continues, increasing demand for recreational opportunities. Existing park, open space, and recreation areas are unevenly distributed, with the fewest park areas most frequently occurring in low income communities of color and in areas with high numbers of children.
- **Regional Coordination.** The study area includes a diverse array of land managers and resource management agencies. The alternatives explore opportunities for greater efficiency, collaboration, priority setting, and funding to enhance resource protection and public enjoyment opportunities.

NPS Call to Action

The year 2016 marks the 100th anniversary of the National Park Service. The NPS Call to Action charts a path toward a second century vision that draws from three major initiatives—*America's Great Outdoors: A Promise to Future Generations* (2011); the National Parks Second Century Commission Report, *Advancing the National Park Idea* (2009); and *The Future of America's National Parks* (the Centennial Report 2007). Many of the objectives of the NPS Call to Action were also mentioned in public scoping comments which placed value on protecting habitat and wildlife corridors,





As the nation's largest urban national park in the second largest metropolitan area in the U.S., Santa Monica Mountains National Recreation Area and the study area provide opportunities to connect urban communities to a national park experience. Photos: NPS.

conserving open space, expanding recreational access where appropriate, reaching out to new audiences, and providing a wide range of educational opportunities.

The following NPS Call to Action objectives are addressed by the alternatives considered in this study:

- Connecting people to parks
- Advancing the NPS Education mission
- Preserving America's special places

Connecting People to Parks

In the next century the NPS has a goal of being relevant and valued by citizens as a source of discovery, economic vitality, renewed spirit, and deepened understanding of our individual and national identity. This will require the NPS to develop and nurture life-long connections between the public and parks – especially for young people – through a continuum of engaging recreational, educational, volunteer, and work experiences. The NPS will strive to connect urban communities to parks, trails, waterways, and community green spaces that give people access to fun outdoor experiences close to home. Diverse communities will be welcomed and engaged through culturally relevant park stories and experiences. The NPS will also strive to expand the use of parks as places for healthy outdoor recreation that contributes to people's physical, mental, and social well-being.

SMMNRA is the nation's largest urban national park. The study area provides many opportunities to better connect urban communities to a national park experience at SMMNRA and to welcome and engage the millions of residents within the greater Los Angeles metropolitan region.

Advancing the NPS Education Mission

The NPS Call to Action sets a goal to advance the education mission by strengthening the NPS as an educational institution and parks as places of learning that develop American values, civic engagement, and citizen stewardship. The NPS will use leading-edge technologies and social media to effectively communicate with and capture the interest of the public. The NPS will also continue to collaborate with partners and education institutions to expand educational programs as use parks as places of learning.

SMMNRA and the Rim of the Valley Corridor are in close proximity to numerous schools, colleges, and universities. As such, the study area offers excellent potential to advance the NPS educational mission. Excellent opportunities also exist to engage residents in citizen science projects.

Preserving America's Special Places

This objective for second century national park management centers on managing our parks as cornerstones in protecting natural and cultural landscapes within the context of the broader ecosystems that they are part of. Threats unforeseen a century ago have emerged beyond park boundaries and demand solutions that are large in scope and require collaboration between partners. To accomplish this objective the NPS must: 1) manage natural and cultural resources to increase resiliency in the face of climate change and other stressors, 2) cultivate excellence in science and scholarship as the foundation for park planning, policy, decision-making, and education, and 3) collaborate with other land managers and partners to create, restore, and maintain landscape-scale connectivity.

The alternatives explore opportunities to protect and maintain landscape-scale connectivity through cooperative conservation approaches and/or enlargement of SMMNRA.

Alternatives Evaluated in the Draft Study Report

Development of the Alternatives

The NPS evaluates four management alternatives in the draft study report. Four preliminary concepts were presented for public review in fall and winter 2012-13. These preliminary concepts included a no action alternative (Alternative A) which documents existing conditions and serves as a baseline for

analyzing proposed or "action" alternatives. Preliminary Alternative B: Cooperative Conservation Partnership explored partnership approaches for protecting significant resources and providing public enjoyment opportunities in the study area. Two other alternatives explored boundary adjustments to SMMNRA, Preliminary Alternative C: Connecting Urban Parks (161,200-acre addition) and Preliminary Alternative D: Connecting Natural Habitat (228,400-acre addition). Preliminary Alternative C expanded the park into more urban areas while Preliminary Alternative D focused on expanding SMMNRA to include critical wildlife corridors. An overview of comments received is included in *Chapter 7: Consultation and Coordination*.

The alternatives in this report have been revised to reflect the comments received on the four preliminary concepts presented in 2012 and to better achieve the defined purpose and need of the draft study report. NPS broadened Alternative B to include opportunities to conserve wildlife corridor connections to the Los Padres and Angeles national forests and San Gabriel Mountains National Monument. Some minor additions were made to both boundary adjustment alternatives (C and D) such as including the Los Angeles River corridor to Ahmanson Ranch. The NPS revised alternative D to include more wildlife corridor connections in a proposed SMMNRA boundary adjustment and to include cooperative conservation planning opportunities (similar to Alternative B) for wildlife corridor connections from the study area to the Los Padres and Angeles national forests and San Gabriel Mountains National Forest. The importance of private land stewardship is reflected in each of the alternatives by including suggestions for voluntary action and technical assistance to support private landowner efforts.

The Four Alternatives Evaluated

The following alternatives are evaluated in the draft study report.

- **Alternative A: Continuation of Current Management (No Action)** serves as a baseline for evaluating the action alternatives;
- **Alternative B: Cooperative Conservation Partnership** would foster cooperative planning and funding tools for the NPS, partner agencies and landowners in the study area and conserve key habitat linkages to the Los Padres and Angeles national forests and San Gabriel Mountains National Monument;
- **Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)** includes a SMMNRA boundary adjustment (approximately 173,000-acre addition) that would provide more recreational opportunities and protect habitat linkages, with an emphasis on creating more opportunities near urban areas; and
- **Alternative D: Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas** includes a SMMNRA boundary adjustment (approximately 313,000- acre addition) with an emphasis on protecting regional wildlife corridors that would include most areas of the Rim of the Valley Corridor areas to SMMNRA (excluding U.S. Forest Service managed lands). Cooperative conservation approaches are suggested for key habitat linkages between the Rim of the Valley Corridor study area, the Los Padres and Angeles national forests, and San Gabriel Mountains National Monument. This alternative would also provide more recreational opportunities to a broad range of urban audiences.

Alternatives Considered But Dismissed

The NPS considered a Rim of the Valley Trail alternative which would have focused only on completion of the trail. This alternative was dismissed because it did not fully meet the purpose and need of the study.

Guide to the Alternatives

Alternative Components

Each of the alternatives is described according to the following components:

- **Concept**: An overall concept statement that generally describes the overall direction or approach for that alternative.
- **Proposed Area**: The proposed area identifies the regions of the study area that are included in the alternative. Maps are also provided to illustrate areas included in the alternatives.
- **Management Approach**: The management approach describes the general approach to management in a particular alternative. For all alternatives, management would continue to be based on the SMMNRA model, with collaborative management by local, state, and federal agencies, private landowners, and various organizations.
- **Rim of the Valley Trail**: Each alternative includes a description of how it would address completion of the Rim of the Valley Trail.
- **Recreational Opportunities and Access, Resource Protection, Interpretation and Education, Operations and Maintenance**: Each alternative describes approaches or opportunities for recreation and access, education and interpretation, resource protection, and operations and maintenance.
- **Preliminary Costs**: Preliminary costs for NPS operations are included for each alternative.

Alternatives B, C, and D contain similar approaches that are restated for each alternative. A comparative view of the alternative components is provided in *Table 5-3: Comparative Summary of Alternatives* at the end of this chapter.

Elements Common to All Action Alternatives

A Partnership Approach to Management
The National Park Service recognizes that many other public agencies, private conservation organizations, and individuals successfully manage important natural and cultural resources and recreational opportunities within the study area. The NPS applauds these accomplishments and actively encourages expansion of conservation activities by state, local, and private entities, and by other federal agencies.

For over 30 years, the NPS has managed SMMNRA through a unique partnership in which the federal government works collaboratively with state, and local park agencies and private landowners to protect the natural and cultural resources of the area.

Management of SMMNRA relies on a cooperative management agreement among the NPS, California State Parks, the Santa Monica Mountains Conservancy, and the Mountains Recreation and Conservation Authority. Collectively, these agencies manage most of the roughly 80,000 acres of public land within the recreation area. Parties to the agreement can share funding, staff, and buildings; cooperate on programs; and jointly manage recreation areas. Such cooperation allows for improved operational efficiency, enhanced protection of resources, and expanded services for the public.

In alternatives C and D where new areas are proposed for addition to SMMNRA, this cooperative management approach would continue to apply. It would also continue to be used in ongoing management of SMMNRA (all alternatives).

U.S. Forest Service Management
The alternatives do not include any U.S. Forest Service (USFS) managed lands in a boundary adjustment for SMMNRA. Management and ownership of the Angeles National Forest and San Gabriel Mountains National Monument would be maintained in all alternatives. USFS policies would continue to be applied to management of these lands. However, the NPS and USFS could work cooperatively through management agreements to protect resources and conduct public outreach, including:

- Conduct activities jointly or on behalf of one another;
- Collocate in federal offices or leased facilities;
- Make reciprocal delegations of their respective authorities, duties and responsibilities; and
- Make transfer of funds and reimbursement of funds on an annual basis, including transfers and reimbursements for multi-year projects.

Retention of Local Land Use and Existing Regulatory Authorities/ NPS Regulatory Authorities
In all alternatives, lands would continue to be managed through a variety of public and private mechanisms by private landowners, federal, state and local agencies, universities, and organizations. In Santa Monica Mountains National Recreation Area (SMMNRA) where the NPS has proprietary jurisdiction, lands not owned by NPS are typically regulated by local and state agencies or other federal authorities that have jurisdiction in the area. In proprietary jurisdiction parks, the state government has not ceded the state's jurisdiction over the park area to the NPS. However, under the National Park Service Organic Act 1916, which established the National Park Service, the Secretary of the Interior has broad authority to establish regulations on certain activities, regardless of ownership, within authorized national park unit boundaries. Such regulations are found in 36 Code of Federal Regulations (CFR) Chapter 1.

As described in the social and economic impacts section of Chapters 3 and 4, additional NPS regulations that could pertain to activities on lands considered for addition to SMMNRA in alternatives C and D include regulation of mineral extraction and the exercise of nonfederal oil and gas rights. These regulations are designed to insure that activities undertaken pursuant to these rights are conducted in a manner consistent with the purposes for which the national park system and each unit thereof were created.

New or existing solid waste disposal sites would be regulated under 36 CFR Chapter 1, Part 6. These regulations prohibit the operation of any solid waste disposal site, except as specifically provided for, and govern the continued use of any existing solid waste disposal site within the boundary of any unit of the national park system. For example, within SMMNRA, the Sanitation Districts of Los Angeles County obtains a permit from NPS to operate the Calabasas landfill in Agoura Hills.

The extent to which such regulations would affect land uses would be dependent on what is specified in the legislation authorizing the boundary expansion, and the nature of the activities. Legislation would be required to implement a boundary addition to SMMNRA. It should be noted that through any resulting legislation, Congress can make determinations about uses and regulations within a specific park unit. For example, some national recreation areas are open to mineral leasing if specified resource protection and administrative objectives can be met. Congress would also specify

which areas would be included or excluded. Additional information on regulations related to mineral extraction and an assessment of land use and social and economic impacts related to these regulations is provided in the evaluation of land use impacts in *Chapter 6: Environmental Consequences*.

All of the study alternatives would adhere to existing general plans and local zoning, as well as state and local laws and policies on lands that are not federally owned. The NPS is authorized to provide comments on proposed projects within SMMNRA and the broader Santa Monica Mountains Zone (SMMZ). SMMNRA's 1978 authorizing legislation established the SMMZ which includes watersheds and canyon slopes associated with, but not formally included in SMMNRA, as well as the easternmost portion of the Santa Monica Mountains encompassing Griffith Park. Local and state agencies are responsible for land use regulations within this zone, but the NPS retains, by law, reviewing authority on projects involving federal funds, permits, or licenses that may affect the national recreation area. This authority was provided by Congress when the national recreation was established to reduce downstream impacts on national recreation area resources when possible.

Privately Owned Lands
Within the national recreation area boundary, the NPS only has authority to directly regulate lands under NPS ownership (with the exception of solid waste facilities and oil and gas extraction as described above). Neither inclusion in the national recreation area nor consideration of cooperative conservation approaches would impact local land use authority over lands not owned by the NPS.

NPS policy is to acquire lands and interests in lands only from willing sellers, with condemnation as a means of last resort. In some cases Congress has expressly limited NPS land acquisition authorities. For SMMNRA, the national recreation area's enabling legislation and the Acquisition of Property Act of 1987 (P.L. 100-202, 101 Stat. 1329-223) prohibits the use of appropriated funds to commence, conduct, or participate in any action in any court of law for condemnation of the property or to initiate a declaration of taking for any property in the recreation area against the owner of any inholding having a detached single-family dwelling, the construction of which began before January 1, 1978, or against the owner or his assignees of any inholding of a detached single-family dwelling the construction of which had begun before January 1, 1978, which dwelling may have been destroyed by fire, storm, or otherwise. Legislation would be required for a boundary expansion to SMMNRA. Such legislation could expressly limit NPS land acquisition to lands for which there are willing sellers.

Rim of the Valley Trail
The NPS would support completion of the Rim of the Valley Trail through partnerships and technical assistance. Once established, the Rim of the Valley Trail would be eligible for designation as a National Recreation Trail, through the existing application process, which is voluntary and could be initiated by trail managers.

Fire Protection
Fire protection would remain the responsibility of existing federal, state, and local agencies (Los Angeles and Ventura counties, U.S. Forest Service, NPS, California Department of Forestry and Fire Protection). NPS fire management practices would only apply to land purchased by the NPS.

Water Supply, Flood Protection, and Sanitation Infrastructure Facilities and Functions
The greater Los Angeles metropolitan region has highly complex systems of public infrastructure to transport and store local and regional water supplies, and to manage flood protection. In addition, numerous facilities are necessary to treat wastewater and manage solid waste. The alternatives would not affect existing public right-of-ways, change existing water rights, water supply operations, water treatment operations, or flood protection efforts.

As described in the section on local land use and regulatory authorities, NPS would be required to regulate solid waste facilities per 36 CFR, Chapter 1, Part 6 in areas proposed for addition to SMMNRA. However, through any resulting legislation, Congress could make an exception for this regulation should this prove an undue burden on the NPS and sanitation agencies given the number of solid waste facilities needed to support adjacent urban areas. Such facilities could also be excluded from a boundary adjustment.

The proposed alternatives would not affect existing and future water rights. Management of water supply and treatment plants would continue under current authorities. In alternatives C and D, the areas proposed for inclusion in the SMMNRA boundary would not entail any new or future beneficial uses or requirements for water supply, water quality, or air quality regulations.

Geographic Database
SMMNRA would work with partners to develop a collaborative geographic database to support decision-making in the study area. Universities and other partners would be engaged to assist in building scientific knowledge to support decision-making.

Alternative A: Continuation of Current Management (No Action)

Concept

The no action alternative is required by the National Environmental Policy Act to provide a baseline from which to compare action alternatives. Current programs and policies of existing federal, state, local and non-profit organizations would continue at existing levels and current conditions and trends would continue. The geographic focus of alterative A includes the 650,000-acre study area known as the Rim of the Valley Corridor.

The National Park Service would have no role in the study area beyond efforts related to existing national park or historic trail units (Santa Monica Mountains National Recreation Area, the Juan Bautista de Anza National Historic Trail, the Old Spanish National Historic Trail) and existing financial and technical assistance programs such as the Land and Water Conservation Fund grant program, Federal Lands to Parks Program, the Rivers, Trails and Conservation Assistance Program, and the National Historic Landmark program.

Proposed Area

The area examined in the no action alterative is the 650,000-acre study area known as the Rim of the Valley Corridor. This is also the authorized area or jurisdiction for the Santa Monica Mountains Conservancy, a state land conservancy (*Figure 5-1: Alternative A - Continuation of Current Management [No Action]*).

Existing Management

Federal, state, and local government agencies and conservation organizations own and manage a little over half of the land in the study area. A full description of these agencies is described in the feasibility section in *Chapter 3: New National Park Unit Criteria Analysis*.

NPS Management

In the no action alternative, the NPS would continue to manage Santa Monica Mountains National Recreation Area (SMMNRA) in partnership with existing agencies and organizations in accordance with the 2002 General Management Plan. Land identified for conservation in the national recreation area's land protection plan would be acquired as funds are available. Any SMMNRA management activities in areas beyond the current national recreation area boundary would be limited to projects that further SMMNRA's defined purpose. Current efforts include urban outreach efforts in Los Angeles and resource management cooperation and assistance. For example, SMMNRA resource management professionals share data and expertise with other agencies and organizations and partner on regional conservation efforts such as the South Coast Missing Linkages Project. SMMNRA recently established an outreach office in downtown Los Angeles in the historic Old Plaza in El Pueblo de Los Angeles Historical Monument to provide opportunities to better connect the resources and recreational opportunities of SMMNRA to surrounding urban communities.

In addition to management of SMMNRA, the NPS would continue manage the two national historic trails (NHT) which traverse the study area, the Juan Bautista de Anza NHT and the Old Spanish NHT. The NPS would continue to provide technical assistance to local communities and organizations through the Rivers, Trails and Conservation Assistance Program and various grant programs that support land conservation and various aspects of historic preservation.

Management by Other Agencies and Organizations

Other federal land management agencies such as the U.S. Forest Service, U.S. Army Corps of Engineers, and the Bureau of Land Management would continue to manage study area lands according to existing plans and policies; as would state and local land management agencies as described in the feasibility section of *Chapter 3: New National Park Unit Criteria Analysis*.

In the no action alternative, existing cooperative management efforts between agencies would continue, and current efforts to protect significant resources and provide new recreational opportunities would continue to occur based on current programs and plans as funding allows. Although fluctuations are inevitable, it is assumed for the purposes of comparison that these efforts will continue at their current levels.

Private Land Stewardship

Many of the study area's privately owned lands, whether small urban greenspaces or large ranches, provide valuable habitat for wildlife. Under the no action alternative, private land conservation efforts and private recreational opportunities would continue at current levels. Local ordinances and initiatives would continue to determine appropriate uses for private lands. Private land protection efforts such as conservation easements, however, would continue to be uncoordinated with broader regional goals for conservation and recreational opportunities.

It is assumed that non-governmental conservation activities would continue at approximately the same levels. Numerous organizations in the region work to conserve and restore lands, as well as to provide recreational opportunities. These efforts are described in the feasibility analysis in *Chapter 3: New National Park Unit Criteria Analysis*.

Alternative A

Continuation of Current Management (No Action)

National Park Service
U.S. Department of the Interior

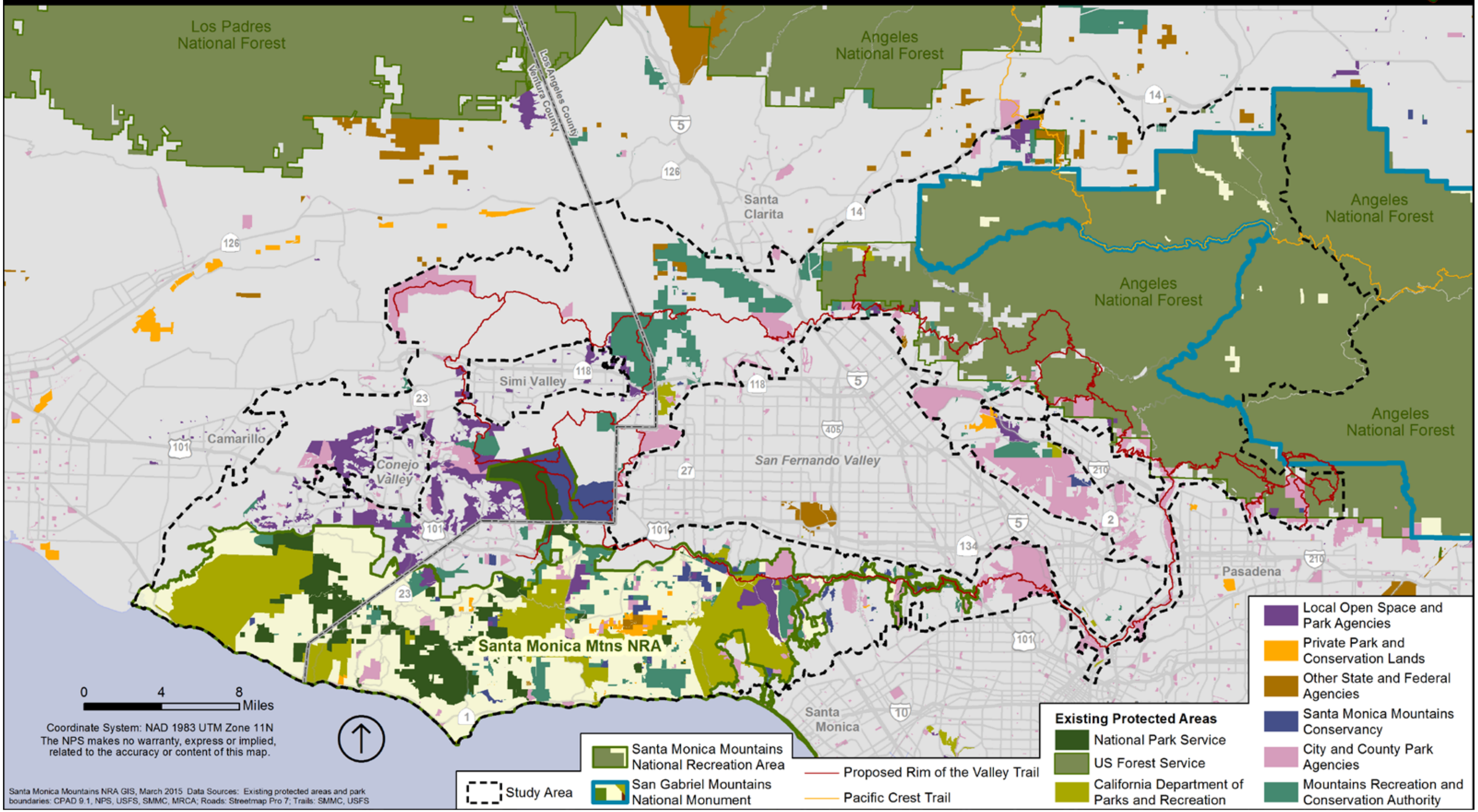


Figure 5-1: Alternative A - Continuation of Current Management (No Action)





Many partnership efforts between public agencies and non-governmental organizations occur in the region. Examples include land protection, such as the purchase of Elsmere Canyon in the study area through partnership between local and state agencies (left), and recreation planning, such as establishment of the Los Angeles River Recreation Zone which included partnership between federal and local agencies, and support from non-profit organizations (right). Photos: NPS.

Regional Partnership Efforts

Numerous partnership efforts between federal, state, and local agencies, non-governmental organizations, and educational institutions would continue. This study does not attempt to record every effort, but several efforts that directly relate to the issues addressed by the alternatives are described below.

Los Angeles River Revitalization Efforts

Many agencies and organizations have been working together on plans to revitalize the Los Angeles River. Through the America's Great Outdoors Initiative, federal agencies are partnering with local stakeholders to support the City of Los Angeles' effort to implement the Los Angeles River Revitalization Master Plan. The America's Great Outdoors Report also listed the Los Angeles River Trail as a priority project. The NPS provides assistance to this project through the Rivers, Trails, and Conservation Assistance Program. The Los Angeles River is also one of seven locations that were selected for assistance from the nation's new Urban Waters Federal Partnership. Led by the Environmental Protection Agency, the partnership will support local watershed revitalization efforts. The U.S. Army Corps of Engineers is currently conducting a restoration study which is evaluating options for restoring sections of the Los Angeles River.

South Coast Missing Linkages Project

Led by South Coast Wildlands, the South Coast Missing Linkages Project is an effort to maintain and restore connections between wildlands in the South Coast Ecoregion. This project addresses habitat fragmentation at a landscape scale by identifying and prioritizing habitat linkages essential for conserving biological diversity and ecological processes. Numerous educational institutions, agencies and organizations, including the National Park Service have partnered with South Coast Wildlands to gather existing data, and identify impediments to and opportunities for connectivity.

Integrated Regional Water Management Plans (IRWMP)

Local agencies, organizations, cities, and county governments within the greater Los Angeles region have collaborated to develop integrated regional water management plans (IRWMP) that focus on water resource management while creating a platform for future funding. A critical component of these efforts is identifying projects that would help achieve the goals and objectives of the IRWMP. The plans have been funded by Proposition 50, and Chapter 8 grants administered by the State Department of Water Resources. The two IRWMPs within the study area include the IRWMP for the Greater Los Angeles County and the Watersheds Coalition of Ventura County IRWMP.

Landscape Conservation Cooperatives

The Department of the Interior, other federal agencies, states, and non-governmental organizations has established 22 Landscape Conservation Cooperatives (LCCs) nationally to work collaboratively at the regional landscape scale to address the impacts that climate change and other landscape scale stressors are having on natural and cultural resources. These landscape-based applied conservation science partnerships are designed to support and enhance on-the-ground conservation efforts by facilitating the production and dissemination of applied science for resource management decision-makers. LCC partnerships facilitate the exchange of information in the implementation of conservation strategies developed by the Cooperative or their partners and monitor the effectiveness of such strategies. The Rim of the Valley Corridor study area is within the California Landscape Conservation Cooperative (CA LCC). The CA LCC extends covers most of California extending from north of Redding to northern Baja California, Mexico and from the Sierra Nevada west. The CA LCC has funded 25 collaborative projects to support the application of climate science to landscape conservation.

Water Supply, Flood Protection, and Sanitation Infrastructure
The hillsides and mountains within the study area surround densely developed urban and suburban areas. These areas require extensive public infrastructure for water supply, flood protection, and sanitation. In the no action alternative, water districts and public agencies would continue to manage water supply, flood protection, and sanitation infrastructure at current levels. Such agencies would also continue existing partnership efforts. Regulatory and management agencies responsible for flood control and sanitation include the Los Angeles County Department of Public Works, the U.S. Army Corps of Engineers (USACOE), and the Los Angeles County Sanitation District.

Rim of the Valley Trail
Legislation in 1983 extended the geographic limits of the Santa Monica Mountains Conservancy's authority to encompass an area known as the Rim of the Valley Trail Corridor. The Rim of the Valley concept was first conceived by Marge Feinberg in 1976 as a master's thesis at California State University, Northridge. The thesis envisioned a regional trail that encircled the hills and mountains surrounding the San Fernando Valley. The Rim of the Valley Trail Corridor Master Plan established a conceptual route for the trail. About 80 of 200 planned miles of the Rim of the Valley Trail are completed and open to the public; 5.7 miles are currently signed as belonging to the Rim of the Valley Trail system, with the remainder associated with other trail systems. Recently, 16 miles of trail have been constructed and four new miles of right-of-way were acquired (California Department of Parks and Recreation 2011).

Under the no action alternative, various agencies and organizations would likely continue to develop proposed segments of the Rim of the Valley Trail system. The NPS would continue to plan and implement portions of the trail that traverse park boundaries as funds become available. NPS technical assistance in completion of the full trail would be limited to existing technical assistance and grant programs. Other agencies and organizations along the trail corridor would continue to work on existing conservation goals and efforts.

Recreational Opportunities and Access
Under the no action alternative, new recreational opportunities and access would occur through existing agencies, organizations, and local governments as funding permits. The U.S. Forest Service, and other state and local agencies and organizations would continue to manage recreational opportunities according to current plans. Recreational opportunities would continue to be limited in some portions of the study area, including Los Angeles in the east and in certain neighborhoods of the Camarillo community in the west. However, existing collaborative efforts among the City of Los Angeles, Mountains Recreation and Conservation Authority, the U.S. Army Corps of Engineers, and many other agencies and organizations would continue to expand recreational activities along the Los Angeles River, including expansion of the Los Angeles River Trail.

Public transportation to parks and open space in the Santa Monica Mountains and other portions of the study area is limited. Agencies and organizations have been working to make these resources more accessible to urban communities by using grants to pay for bus transportation for groups. However, these funds have dwindled in recent years and initial programs have been only marginally successful. Current efforts would continue under the no action alternative.

Resource Protection
Protection of natural and cultural resources under the management of existing agencies would continue. Government grant programs, California state land conservancies, local governments, and non-profit land conservancies/trusts throughout the study area would continue to conserve and restore native ecosystems and habitat. Existing planning efforts to link habitat such as the South Coast Missing Linkages Project would continue. Implementation of the recommendations in the South Coast Missing Linkages Project would continue through the efforts of existing agencies, non-profit organizations, and landowners. Coordination among agencies to protect wildlife habitat and corridors and cultural resources would continue to occur on a case-by-case basis in various locations throughout the study area. For example, multiple agencies and organizations have been working toward implementing a functional wildlife corridor between the two units of the Angeles National Forest. The area is threatened by both residential and industrial growth and the subdivision of parcels (City of Santa Clarita and Santa Clarita Watershed Recreation and Conservation Authority 2008).

Protection of Sensitive, Threatened and Endangered Species
The California Department of Fish and Wildlife (CDFW) is responsible for planning and regulatory activities related to state threatened and endangered species of special concern, and related resources and activities. The CDFW also regulates hunting and sport fishing seasons in the study area, including on Angeles National Forest lands. Hunting is not permitted on public lands within SMMNRA.

In partnership with the California Department of Transportation, CDFW conducted a statewide assessment of essential habitat connectivity. The work was guided by input and review of a multidisciplinary team of agency representatives, a technical advisory group, and a steering committee. The assessment identified the connection between the Santa Monica Mountains and the Los Padres National Forest through the Simi Hills and Santa Susana Mountains as "essential connectivity area," meaning the area is important state-wide for maintaining connectivity between large blocks of habitat.





Santa Monica Mountains National Recreation Area has been engaged in study of wildlife movement and has been partnering with public and private entities to study landscape connectivity in the region. This work has included setting of cameras to capture wildlife movement in key locations in and around SMMNRA. Photos: NPS.

The U.S. Fish and Wildlife Service (USFWS) would continue to work with private landowners, local and state governments, federal agencies, corporations, and other entities to conserve and protect threatened and endangered species and other species of concern on both public and private lands. The USFWS also offers incentive and grants programs for wildlife and habitat conservation.

Cultural Resource Management

Historic sites and other cultural resources on public lands would continue to be protected by the managing agencies. Documentation and preservation would be limited by funding availability and would continue to be managed on a project by project basis. Cultural resources on private lands would be protected at the discretion of the landowner. Cultural resource protection would continue to occur through local, state, and federal agency preservation efforts, largely independently without any regional coordination. Preservation organizations and societies throughout the study area would support such efforts. The NPS would continue to manage cultural resources within SMMNRA in accordance with the National Historic Preservation Act, other federal laws, and NPS *Management Policies 2006*.

Operations and Maintenance

Operations and maintenance of existing parks and open space would be assumed to remain at existing levels, with fluctuations over time due to local and state budget priorities. For some agencies, more resources are available for the acquisition of lands than are available for operations and management. Because the primary purpose of this study is to evaluate and provide recommendations to Congress on the role of the NPS in the Rim of the Valley Corridor study area, NPS operations and budget within the study area is the emphasis of this section.

Funding and Costs

NPS Annual Operating Budget – SMMNRA

Alternative A assumes that current authorized funding levels for the NPS within SMMNRA would continue. Some fluctuations would occur to account for inflation, new management needs, and to reflect national budget priorities. The NPS base budget for SMMNRA in fiscal year 2012 was $8.6 million, which includes employee salaries and day-to-day operating expenses. SMMNRA also receives funding from other NPS programs, such as those that fund construction projects and biological monitoring. In fiscal year 2012, the NPS employed 97 staff at SMMNRA (75 funded from the operating base budget).

SMMNRA also has a robust volunteer program that plays a key role in supporting park operations. In fiscal year 2012 more than 7,500 volunteers contributed over 80,000 hours of volunteer labor to SMMNRA. Volunteer hours were used for park administration and general management, a campground host, cultural resource management, interpretation, maintenance, natural resource management, operations and visitor protection, and training. Over half of the hours volunteered were used for resource management and operations/visitor protection.

NPS Land Protection Funding - SMMNRA

The NPS employs a variety of methods, as appropriate, for protecting parklands. These methods generally include fee-simple ownership (all the rights associated with purchasing real property), less-than-fee real property interests (such as easements or rights-of-way), or cooperative approaches such as management agreements, participation in regional planning efforts, etc. Within SMMNRA, the NPS employs all of these approaches. The NPS has purchased land for direct management, but works cooperatively on planning, resource protec-

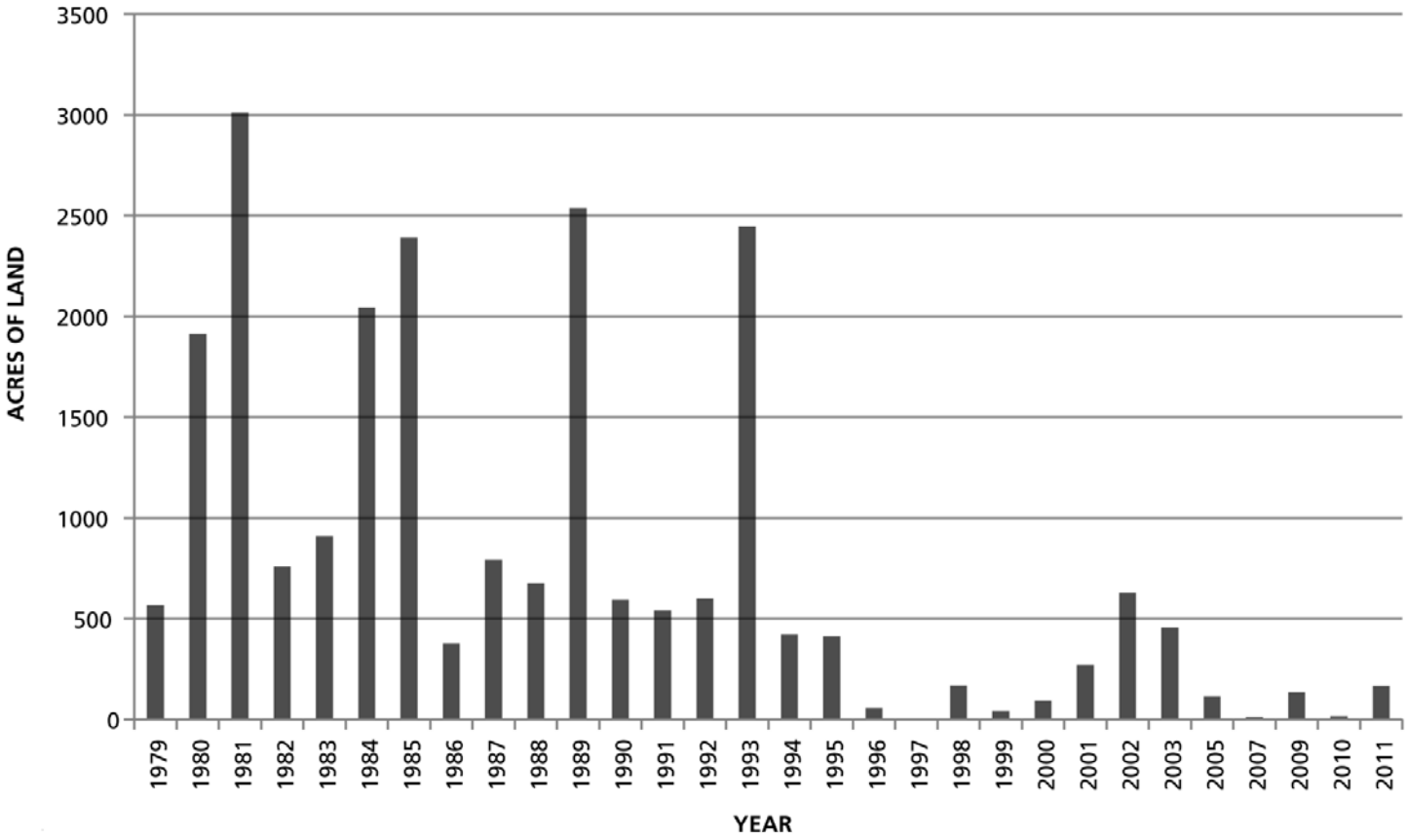


Figure 5-2: Acres of Land Acquired by Year (1979-2011) by NPS in Santa Monica Mountains National Recreation Area

tion, and providing visitor services on other public lands within SMMNRA. SMMNRA's land protection plan sets priorities for land protection and identifies a wide range of approaches to protect significant resources and provide public enjoyment opportunities.

When nonfederal land is identified for NPS acquisition, the NPS makes every reasonable effort to reach an agreement with the owner on the purchase price in accordance with uniform appraisal standards. NPS policy is to acquire lands and interests in lands from willing sellers, with condemnation as a means of last resort. No NPS-owned lands within SMMNRA have been acquired through condemnation. In most cases lands have been purchased for fee-simple ownership. However, some lands have been donated, transferred from other agencies, or exchanged.

Established by Congress in 1964, the Land and Water Conservation Fund (LWCF) is the funding source for NPS land acquisition. The Act, as amended, designated that a portion of annual receipts from offshore oil and gas leases be placed into a fund for state and local park land acquisition and park facility development, as well as for the protection of national parks, forests, and wildlife areas. The program is divided into two distinct funding sources: state grants, and federal acquisition funds. These latter funds provide for national park fee and easement acquisitions. Each year, based on priority recommendations from the federal land management agencies (NPS, USFS, FWS, and BLM), the President can forward these recommendations to Congress requesting funding for specific LWCF projects.

Between 1978 and 2011, the NPS acquired 23,300 acres, investing over $163 million in appropriated funds for land acquisition at SMMNRA (*Figure 5-2: Acres of Land Acquired by Year (1979-2011) by NPS in Santa Monica Mountains National Recreation Area*). The majority of lands acquired by NPS (90% or 21,000 acres) were purchased prior to 1996. Since that time land acquisition funding has decreased. In the last ten years, approximately 1,800 acres have been purchased by the NPS. In the no action alternative, trends in funding for land acquisition would be expected to remain the same. NPS land acquisition would continue to be targeted towards lands that protect nationally significant natural and cultural resources and provide recreational opportunities. The NPS would continue to pursue cooperative approaches to land protection within SMMNRA.

Alternative B: Cooperative Conservation Partnership

Concept

Congress would authorize and direct SMMNRA to facilitate a partnership of public and private landowners, organizations, and institutions to establish an interconnected system of parks, habitat, and open space within the study area. Rim of the Valley Corridor area partners would also collaborate to provide coordinated education and interpretation focused on connecting people to the special resources and stories in the study area. The geographic focus of alterative B includes the 650,000-acre study area known as the Rim of the Valley Corridor and habitat linkage areas that connect the Rim of the Valley Corridor to the Los Padres National Forest and the Sierra Pelona unit of the Angeles National Forest. Existing agencies, organizations, and landowners would continue to own and manage lands within these areas. The existing SMMNRA boundary would remain unchanged.

These objectives would be achieved through the development of a cooperative conservation plan. The plan would identify shared goals and identify specific strategies for connecting open space, providing new recreational opportunities, and coordinated education and interpretation. Implementation of the plan would be accomplished by the public and private organizations and individuals that own and manage land in the area.

The NPS would continue to manage SMMNRA in partnership with other agencies and organizations. Beyond SMMNRA, the NPS would work through existing authorities to provide technical assistance to partners to achieve the goals of the plan.

Proposed Area

There would be no new NPS unit or boundary adjustment to SMMNRA. The geographic focus of the partnership and NPS technical assistance would generally include the Rim of the Valley Corridor study area and habitat linkage areas important for protection of significant resources, including areas connecting the Santa Susana Mountains to the Topatopa Mountains and areas connecting the San Gabriel Mountains to the Sierra Pelona (*Figure 5-3: Alternative B - Cooperative Conservation Partnership*).

Management Approach

Achieving Goals through Cooperative Conservation

Existing management by agencies, local government, organizations, landowners, and institutions as described under the no action alternative would continue under alternative B. Agencies would maintain authorities and land management responsibilities. However, through the development of a cooperative conservation plan, agencies, organizations, and landowners would work together to establish regional goals and priorities for protection of significant resources, including key wildlife corridors, and new opportunities for recreation, and educational programming throughout the area. Federal, state, local, and private organizations could participate to develop and initiate implementation of the cooperative conservation plan.

The NPS would take a lead role in facilitating the development of the plan and would provide technical assistance to local jurisdictions, agencies, organizations, or landowners in the implementation of plan goals and objectives. The partnership would also work together to leverage funding for conservation priorities and goals identified in the plan. Creative new approaches to funding may be developed where there is a strong community commitment to action.

The cooperative conservation planning effort would not establish additional regulatory or land use authority over existing governmental agencies or other regulatory authorities. Local government participation and implementation actions would be voluntary.

Federal, State and Local Land Management Agencies and Programs

NPS Role

As in the no action alternative, the NPS would continue to acquire and manage lands in SMMNRA and work cooperatively with other agencies, organizations, institutions and landowners to protect significant resources and provide exceptional recreational and educational opportunities.

NPS management policies recognize that significant resources, scenic vistas, and ecological processes related to park resources often cross political boundaries. Evaluation of national significance and suitability of the Rim of the Valley Corridor area found that protection of resources in the study area would expand and enhance protection of the nationally significant natural, cultural, and scenic resources of SMMNRA.

No changes to the current national recreation area boundary would be proposed. Under this alternative, Congress could direct the NPS to facilitate the development of a conservation plan for the Rim of the Valley Corridor area and adjacent habitat linkages. The plan would be developed by a partnership of area land management agencies, local governments, private landowners, organizations, and institutions. Local communities would be actively engaged in the development of the plan.

Following completion of the plan, SMMNRA would implement identified goals within its authorized boundary and

Table 5-1: National Park Service, Laws and Policies to Work Cooperatively Beyond Existing Park Boundaries

NPS Management Polices (NPS *Management Policies 2006*, Sections 1.6, 4.1, 4.4.2)	• Parks should be involved in regional and local land-use planning when pertaining to park resources • Parks should manage their resources in the context of larger ecosystem functions and processes • The NPS should consult with other land managers concerning wildlife management
Executive Order 13352	• Encourage partnerships and collaboration between land managers to protect and enhance natural resources and the enjoyment of the environment
Service First Authority	• Gives authority to the Secretaries of the U.S. Department of the Interior and the U.S. Department of Agriculture to conduct business together • Gives authority to use and transfer funds across agencies
Consolidated Natural Resources Act of 2008	• Gives the Secretary of the Interior the authority to enter into cooperative management agreements to protect park resources inside and outside park boundaries • Agreements must protect wetland and/or coastal resources • Gives the ability to contribute financially to projects outside of park boundaries if they benefit park resources
Department of the Interior Fish and Wildlife Policy	• Encourages cooperation between state and federal agencies in managing wildlife

Source: NPS 2013a

would also use existing authorities to assist and cooperate with other agencies and organizations in achieving the goals of the plan. *Table 5-1: National Park Service, Laws and Policies to Work Cooperatively Beyond Existing Park Boundaries* provides a description of existing laws and policies that allow the NPS to work beyond park boundaries. SMMNRA would also expand its capacity to provide technical assistance to agencies and organizations in the Rim of the Valley Corridor area to achieve the goals of the plan and to increase outreach efforts to local communities. NPS technical assistance could be provided for natural resource protection, trail and park planning, and partnership development between agencies, organizations, and landowners to facilitate achievement of common goals.

SMMNRA would work with partners to develop a collaborative geographic database to support science-based decision-making in this area. Universities and other partners would be engaged to assist in building scientific knowledge to support decision-making.

Interagency Collaboration

The cooperative conservation plan would explore new opportunities for agencies to collaborate on resource protection, connecting parklands and trails, defining achieving restoration objectives, and providing coordinated interpretive and educational opportunities that highlight the national significance of the Rim of the Valley Corridor area.

Cooperative Management Agreements

As described under the no action alternative, within SMMNRA, the NPS, Santa Monica Mountains Conservancy, Mountains Recreation and Conservation Authority, and California State Parks work collaboratively under a cooperative management agreement that allows the agencies to share staff and resources. The National Parks Omnibus Management Act of 1998 (16 USC 1a-(2)1)) provides that, "where a unit of the National Park System is located adjacent to or near a State or local park area, and cooperative management between the National Park Service and a State or local government agency of a portion of either park will allow for more effective and efficient management of the parks, the Secretary may enter into an agreement with a State or local government agency to provide for the cooperative management of the federal and state or local park areas." To implement the goals of the cooperative conservation plan, the NPS would explore development of cooperative management agreements for areas in the Rim of the Valley Corridor beyond SMMNRA.

Through a cooperative management agreement, the U.S. Fish and Wildlife Service, National Park Service, U.S. Forest Service, and Bureau of Land Management could leverage resources for integrated resource restoration and strategies for maintaining and restoring wildlife corridors. Such an agreement could also allow the agencies to share staffing for visitor services, streamlining individual agency efforts and capitalizing on the expertise of each agency.

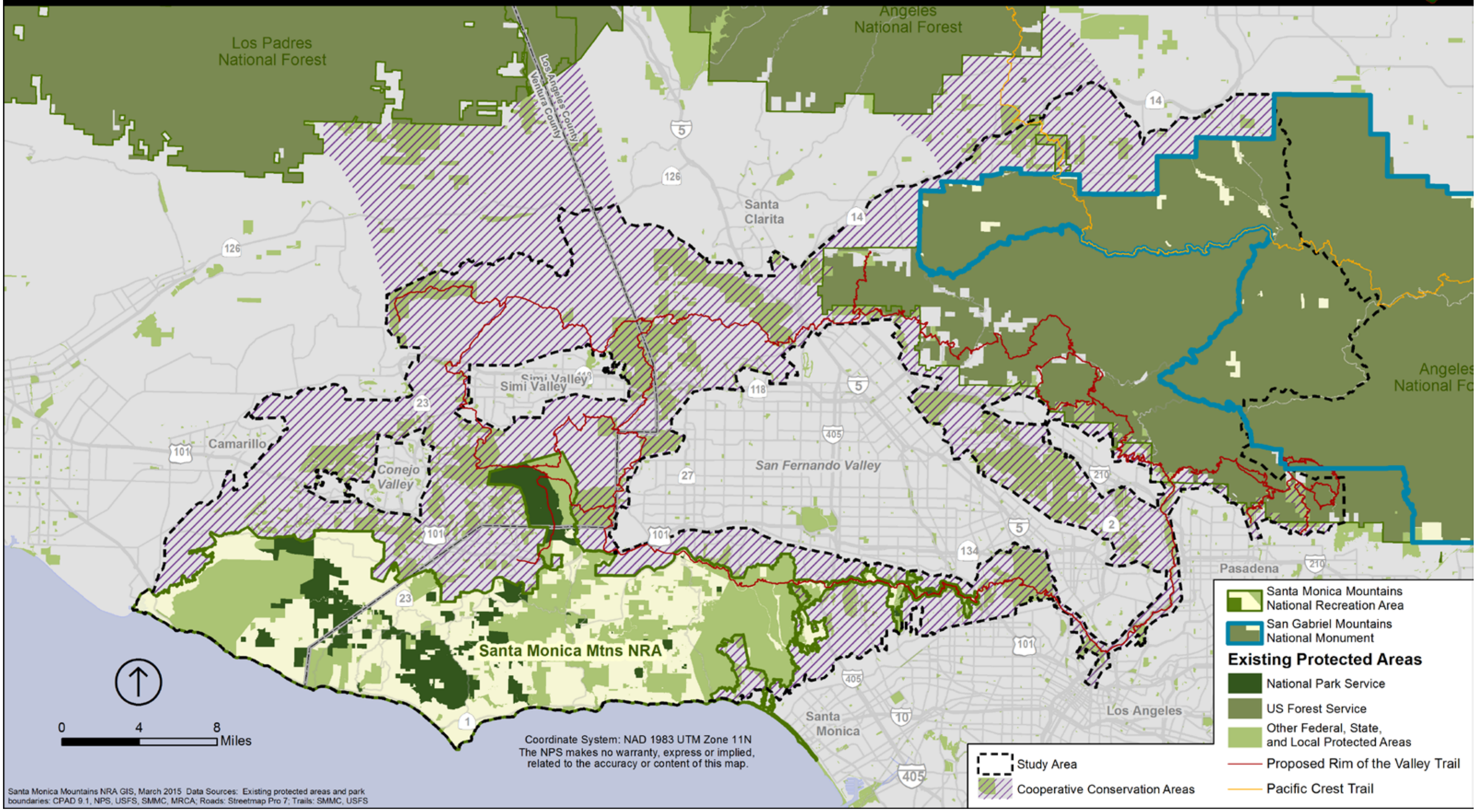
Non-Governmental Organizations and Private Land Stewardship

As described in the no action alternative, non-governmental and private land stewardship would continue to play a key role in the conservation of resources with the study area. Privately owned open space, whether undeveloped or in agricultural use, provides habitat for wildlife and contributes to scenery. Some private lands have trail easements or right of ways for equestrian or other recreational activities. Additional resources, strategies, and opportunities for private conservation efforts and land stewardship would be a key component of the cooperative conservation plan. Local landowners and organizations could participate in the development of the plan. Local ordinances would continue to determine appropriate uses for private lands. Private land stewardship actions would be voluntary on the part of the landowner.

Alternative B

Cooperative Conservation Partnership

National Park Service
U.S. Department of the Interior



Santa Monica Mountains NRA GIS, March 2015 Data Sources: Existing protected areas and park boundaries: CPAD 9.1, NPS, USFS, SMMC, MRCA; Roads: Streetmap Pro 7; Trails: SMMC, USFS

Figure 5-3: Alternative B - Cooperative Conservation Partnership

Non-Governmental Land Conservation

Non-governmental organizations would be part of the cooperative conservation planning effort and could work collaboratively with agencies and private landowners to help protect significant resources and critical wildlife corridors. Land trusts often work with private landowners to purchase conservation easements which maintain private ownership and use while providing compensation for land conservation.

Incentive Programs for Private Land Stewardship

Federal and state agencies have established numerous incentive programs to assist private landowners in their conservation efforts. The cooperative conservation plan could identify additional opportunities to leverage funding and for private landowners to conserve or restore lands. Within the federal government, the U.S. Department of Agriculture and U.S. Department of the Interior (U.S. Fish and Wildlife Service) offer numerous programs targeted to assisting private landowner conservation. *Table 5-2: Incentive and Assistance Programs for Private Land Stewardship* describes existing incentive and assistance programs provided by federal and state programs. Several examples of the available opportunities are also discussed below.

The U.S. Department of Agriculture offers multiple programs to support private land stewardship efforts. For example, the Wildlife Habitat Incentive Program provides both technical and financial assistance to landowners who want to develop and improve wildlife habitat on their agricultural land, non-industrial private forest land, or tribal land. The U.S. Fish and Wildlife Service has a Partners for Fish and Wildlife Program that provides technical and financial assistance to private landowners who are willing to partner on habitat improvements for migratory birds, as well as other threatened and endangered wildlife. The Conservation Reserve Program (Farm Services Agency) funds farmland projects that provide vegetative cover, riparian buffers, and other resource conserving activities. Farmers who enter the program receive an annual rental payment of up to $50,000 per person per year for the land taken out of agricultural production. Fifty percent cost sharing is also available for implementing conservation plans. Conservation Reserve Program contracts last 10-15 years. As of 2012, approximately 10,500 acres of farmland were converted to habitat under the Conservation Reserve Program in California.

The cooperative conservation plan could also support existing programs to conserve farmlands such as those authorized by California's Williamson Act. The Williamson Act established an incentive-based conservation program to protect agricultural resources, preserve open space, and promote efficient urban growth patterns. The Williamson Act enrollment is voluntary, and an agency cannot require a landowner to enter into a contract as a condition of approval for any permit or project.



In alternative B, the NPS would provide technical assistance and partnership support for planning and implementation of the Rim of the Valley Trail. The Crest to Coast Trail in the Santa Susana Mountains that will connect to the Santa Clara River is a locally-led effort that will be part of the Rim of the Valley Trail. Photo: NPS.

Technical Assistance

The cooperative conservation plan would also identify additional opportunities for agencies to provide technical assistance to private landowners towards conservation efforts. Opportunities for technical assistance to conserve significant resources and wildlife habitat could be facilitated through the three resource conservation districts, the U.S. Department of Agriculture's Natural Resources Conservation Service, the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and the NPS.

Rim of the Valley Trail

The cooperative conservation plan would identify opportunities, priorities, and specific strategies for completion of the Rim of the Valley Trail. Planning and implementation of the trail would be supported by the NPS through technical assistance and partnerships. The trail would continue to be owned and managed by partner agencies and organizations. Those agencies and organizations would continue to be responsible for trail development. The NPS would only develop or manage segments of the Rim of the Valley Trail located within the current boundary of SMMNRA.

Recreational Opportunities and Access

The cooperative conservation plan would identify priorities for recreational opportunities with particular emphasis on connecting existing trail systems and park units and targeting new recreation and open space for communities that currently lack adequate access. Specific strategies and priorities for completing regional trails systems such as the Rim of the Valley Trail would be explored. The NPS would provide technical assistance to communities and organizations within the Rim of the

Table 5-2: Incentive and Assistance Programs for Private Land Stewardship

U.S. Department of Agriculture	
Conservation Reserve Program	Offers landowners the opportunity to receive financial and technical assistance for placing highly erodible and other environmentally sensitive cropland in conservation covers such as grass, trees, wetlands, and buffers Participants receive annual payments for the length of their 10- or 15-year contract. National enrollment in CRP is authorized for up to 32 million acres.
The Wetlands Reserve Program	Purchases long-term (30-year or perpetual) easements to protect and restore formerly degraded wetlands. The program also provides technical advice and financial assistance for wetland restoration on easement lands.
The Grassland Reserve	Emphasizes support for working grazing operations, enhancement of biodiversity, and protection of grasslands under threat of conversion to other uses. Participants voluntarily enroll their land in 10-, 15-, or 20-year rental contracts or in permanent easements.
The Healthy Forests Reserve Program	Provides assistance to landowners, on a voluntary basis, in restoring, enhancing, and protecting forest resources on private lands through easements, 30-year contracts, and 1-year cost-share agreements.
The Environmental Quality Incentives Program	Provides financial and technical assistance to agricultural or forest producers to help them plan and implement conservation practices.
The Wildlife Habitat Incentive Program	Provides technical and financial assistance to conservation-minded landowners who want to develop and improve wildlife habitat on their agricultural land, nonindustrial private forest land, or tribal land.
The Conservation Stewardship Program	Offers annual payments for installing new conservation activities and maintaining existing practices. Additionally, a supplemental payment is available to participants who adopt a resource-conserving crop rotation.
U.S. Forest Service	
The Forest Legacy Program	Partners with state programs to protect working forests from development, primarily through conservation easements.
The Forest Stewardship Program	Provides technical assistance, through state forestry agency partners, to nonindustrial private forest owners to encourage and enable long-term forest management.
Community Forest and Open Space Conservation Program	Provides financial assistance grants to local governments, tribes, and nonprofit organizations working to establish community forests.
Urban and Community Forestry Program	Provides technical, financial, educational, and research services to communities so they can maximize social, economic, and environmental benefits from community trees and forests.
U.S. Fish and Wildlife Service	
Partners for Fish and Wildlife Program	Provides technical and financial assistance to private landowners who are willing to partner on habitat improvement projects for migratory birds, as well as other wildlife such as threatened and endangered species. Field biologists work one-on-one with private landowners on conservation projects on their land.
State & Tribal Wildlife Grants Program	Provides federal dollars to every state and territory to prevent wildlife from becoming endangered and to keep common species common. The funds are used to implement each state's Wildlife Action Plan. A non-federal match requirement assures local ownership, and leverages state and private funds to support conservation.
North American Wetlands Conservation Act	Provides matching grants to organizations and individuals who carry out wetlands conservation projects to benefit migratory birds associated with wetlands.
National Coastal Wetlands Grant Program	Provides matching grants to states for acquisition (including conservation easements), restoration, management, and enhancement of coastal wetlands.

Source: North American Bird Conservation Initiative, U.S. Committee 2013





In alternative B, the NPS could provide technical assistance to partners for interpretation and educational messaging. Partnership based programs like the Science Festival (left) and interpretive facilities and media, such as found at the Anthony C. Beilenson Visitor Center at King Gillette Ranch, are examples of NPS' work with other agencies. Photos: NPS.

Valley Corridor area to plan for parks and trails, and to provide interpretation and education about significant resources and conservation efforts.

As in alternative A, the NPS would continue current outreach and other related efforts to engage urban communities. The NPS would coordinate and collaborate with the U.S. Forest Service's Southern California Consortium to conduct outreach with schools and youth.

Education and Interpretation

As described in the no action alternative, many agencies and organizations provide interpretive and educational opportunities. However, in many portions of the study area interpretative and educational programming is not coordinated. The cooperative conservation plan would evaluate needs and opportunities for interpretation and education. The NPS could provide technical assistance in interpretive and educational messaging in partnership with existing agencies and organizations throughout the cooperative conservation area. Public engagement in resource protection through both interpretation and citizen science would be explored in the cooperative conservation plan.

Resource Protection

Priorities for Land Conservation

The cooperative conservation plan would identify common priorities for land conservation that would emphasize protecting and enhancing habitat connectivity between existing parks and open spaces, and protection of nationally significant resources. Existing park and open space authorities would use the plan to target future land conservation efforts around priorities established in the cooperative conservation plan. Emphasis would also be placed on private land stewardship and providing technical assistance to public and private landowners, as requested, to conserve resources.

Existing agencies and organizations would continue to acquire lands for conservation and open space as permitted under existing authorities. The NPS would not have authority to acquire lands beyond the boundary of the existing SMMNRA. However, the NPS would continue to purchase lands to protect core habitat areas and wildlife corridors within SMMNRA. The NPS would also collaborate regionally to share research and information and participate in strategies to protect important wildlife corridors.

In more developed areas, the cooperative conservation plan could identify priority areas where restoration could enhance biodiversity and create more resilient biological systems. Current efforts on the Los Angeles River exemplify such opportunities. The U.S. Army Corps of Engineers is currently conducting a feasibility study to explore restoration of an 11-mile stretch of the Los Angeles River focusing on goals to restore riparian areas and enhance regional habitat connectivity. Restoration objectives explored in the plan could create new habitat linkages between the Santa Monica and San Gabriel Mountains. In more rural and undeveloped areas, existing federal and state programs that provide financial incentives for private landowners to restore habitat could be leveraged to achieve plan objectives.

Cultural Resources Documentation and Protection

Many significant historic and archeological resources on both public and private land are not well documented or protected in the Rim of the Valley Corridor. Although comprehensive inventories have been completed for cultural resources in SMMNRA, for California State Parks, and recently for portions of the City of Los Angeles, other portions of the study area are less well-documented. Additional inventories, documentation and mapping of cultural sites could be undertaken both on public lands and on the land of willing private landowners. Information about sensitive sites need not be released to the public; details and locations may need to be withheld to protect

the resources. Partner agencies and organizations could make recommendations related to cultural resources protection and interpretation and engage key educational and research institutions to implement the recommendations.

Significant sites could be evaluated for listing on the National Register of Historic Places or for designation as a national historic landmark. Such designations would help to document the historical and archeological significance of the area and could enhance funding and technical assistance opportunities, for such as using the Historic Preservation Fund, Save America's Treasures Fund and/or the California Heritage Fund. Some private conservation efforts would likely be eligible for tax benefits. For example, the Mills Act (enacted in 1972) grants participating local governments (cities and counties) the authority to enter into contracts with owners of qualified historic properties who actively participate in the restoration and maintenance of their historic properties while receiving property tax relief.

Many sites within the study area are important to Native American tribes and organizations with ties to the area. These tribes, organizations and others could continue to work with landowners and managers to protect sacred sites and archeological resources, and to obtain access or ownership of important sites for ceremonial, interpretive, and/or educational purposes.

Operations and Maintenance

Existing public and private landowners and managers would continue to operate and manage their land and facilities. The cooperative conservation plan could identify additional needs for operations and maintenance as well as opportunities where cooperative management approaches could streamline the operation and maintenance of parks and open space.

Funding and Costs

The cooperative conservation plan would identify ways to leverage additional resources from existing incentive programs and outside funding sources. For example, implementation strategies could explore leveraging funding for land protection from the Land and Water Conservation Fund or other public and private funding sources. The plan could identify federal, state, and local programs that provide technical assistance, funding, and incentives for private and non-governmental organizations to achieve the goals of the cooperative conservation plan. Partner agencies and organizations could also establish a separate fundraising organization or be a coordinating body for existing grant programs to assist in implementation.

NPS Operating Costs

To facilitate development of the cooperative conservation plan, the NPS would require funding for coordination of the plan. Given the complexity of jurisdictions and land ownership in the region, and the amount of public engagement that would be anticipated, the cooperative conservation plan would take several years to complete. The total one-time cost of the planning effort could range from $500,000-$700,000. These costs would include staffing, public outreach, and development of publications and outreach materials.

Although the NPS would not have direct management responsibilities for areas beyond SMMNRA, additional resources would be required for the NPS to engage in cooperative efforts and to provide long-term technical assistance in the implementation of the cooperative conservation plan.

Existing staff at SMMNRA would contribute toward cooperative conservation planning. Additional NPS staff to support implementation, such as ongoing technical assistance and outreach efforts in the Rim of the Valley Corridor, could include:

- **Planning staff (~2-4 FTE)** - To facilitate development of the cooperative conservation plan, provide staff support to the advisory committee, provide ongoing technical assistance to communities develop trails, plan for parks, and to support regional efforts to achieving the goals of the cooperative conservation plan.
- **Resource management staff (~2-4 FTE)** - To participate in regional strategies for conservation, restoration, and research efforts, and to provide technical assistance to agencies, organizations, and landowners. NPS would also provide support to develop a geographic database for the cooperative conservation area.
- **Outreach and interpretation staff (~2-4 FTE)** – To provide technical assistance and regional coordination for interpretive and educational programs.

The level of staffing would indicate the degree to which the NPS could provide technical assistance and additional outreach and education programs. The annual NPS operating budget increase for ongoing assistance to support cooperative conservation and outreach efforts (based on FY12 costs) is estimated to be approximately $400,000-$1,000,000, primarily for staffing.

Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)

Concept

Alternative C would include a boundary adjustment to Santa Monica Mountains National Recreation Area (SMMNRA) to provide more recreational opportunities to a broad range of urban audiences, including many who are under-represented in national parks and underserved by state and local parks. This alternative would also provide for protection of significant resources and habitat connections within the proposed addition to SMMNRA.

The proposed boundary adjustment would add 173,000 acres to SMMNRA's authorized boundary. Areas included in the boundary adjustment generally include the portions of the study area bordering the most populous areas of the Los Angeles region, including the mountains surrounding the San Fernando and La Crescenta Valleys, and the Los Angeles River and Arroyo Seco corridors. The boundary adjustment would not include any area of the Angeles National Forest or San Gabriel Mountains National Monument.

SMMNRA would be authorized to partner and provide technical assistance to land managers and private landowners to protect habitat connections to the national forests and to assist local communities in planning for recreational opportunities.

Proposed Area

In alternative C, the proposed boundary adjustment would add the Los Angeles River and Arroyo Seco corridors, the Verdugo Mountains-San Rafael Hills, the San Gabriel Mountains foothills, and the eastern portions of the Simi Hills and the Santa Susana Mountains to SMMNRA. Existing parks such as Griffith Park, Hansen Dam, Sepulveda basin, Los Encinos State Park, Debs Park, El Pueblo de Los Angeles Historical Monument, and Los Angeles State Historic Park would serve as major portals into the Rim of the Valley area (*Figure 5-4: Alternative C - Rim of the Valley Boundary Adjustment [NPS Preferred Alternative]*).

The proposed boundary adjustment would add 173,000 acres to SMMNRA and would require Congressional legislation for implementation. Approximately 40% of the 173,000-acre addition is currently protected by other land management agencies and organizations for purposes that include conservation, open space, and/or recreation.

Angeles National Forest and San Gabriel Mountains National Monument lands would not be included in the boundary adjustment. The National Park Service (NPS) and U.S. Forest Service would continue to explore partnership opportunities similar to the no action and the cooperative conservation partnerships alternatives.

Management Approach

Management by existing agencies, local governments, organizations, private landowners, and institutions described under the no action alternative would continue under alternative C. Agencies and local governments would maintain existing authorities and land management responsibilities. However, the NPS would become another partner in the management of an additional 173,000 acres within the study area. Cooperative conservation approaches described under alternative B would be a component of the management approach for the proposed addition to SMMNRA.

NPS Roles

Through legislation, Congress could authorize NPS to manage the new additions in partnership with existing land management agencies, private landowners, and organizations. The NPS could expend funds on resource protection, visitor services, land acquisition, and the planning and development of visitor facilities such as trails, waysides, etc. within the expanded NPS boundary. NPS land acquisition would be targeted, with an emphasis on significant resources, maintaining and enhancing habitat connectivity, and providing recreational opportunities. The NPS would only consider purchase of land from willing sellers.

As in alternative B, the NPS would also expand its capacity to provide technical assistance to agencies and organizations in the Rim of the Valley Corridor area to increase outreach efforts to surrounding local communities. Beyond SMMNRA, NPS technical assistance could be provided for natural resource protection and restoration, trail and park planning, and to bring agencies, organizations, and landowners together towards achieving common goals.

Other Federal, State and Local Land Management Agencies and Organizations

The NPS would work with local, state, and federal agencies to administer a cooperative land protection program and management framework. New planning efforts would explore opportunities for agencies to collaborate and set shared goals for resource protection, connecting parklands and trails, restoration objectives, and providing coordinated interpretive and educational opportunities that highlight nationally significant resources in newly added areas. The NPS would expand the cooperative management agreement with California State Parks, the Santa Monica Mountains Conservancy, and Mountains Recreation and Conservation Authority to provide coordinated management in the boundary addition. Through the cooperative management agreements, the NPS, U.S. For-

est Service, U.S. Fish and Wildlife Service, and Bureau of Land Management could explore new opportunities to leverage resources for protecting habitat linkages and providing visitor services.

Local Land Use and Regulatory Authorities

The SMMNRA boundary addition would not establish additional regulatory or land use authority over local governments. NPS land management policies and regulations, with the exception of solid waste facilities, would only apply to lands that the NPS acquires. All of the alternatives would include conformance with existing general plans and local zoning, as well as state and local laws and policies for lands that are not federally owned.

Non-Governmental Organizations and Private Land Stewardship

The NPS would work cooperatively with non-governmental organizations and private landowners (upon request) to undertake cooperative conservation efforts that do not require federal land acquisition. As described in alternative B, this could include easements, developer dedications, targeting federal and state incentive programs for private land conservation, and technical assistance from agencies and organizations for land conservation and habitat restoration.

Local ordinances would continue to determine appropriate uses for private lands. Private land stewardship actions and conservation efforts would continue to be voluntary on the part of the landowner.

Rim of the Valley Trail

Various agencies and organizations would continue to develop proposed segments of the Rim of the Valley Trail. Overall planning and implementation of the Rim of the Valley Trail would be supported by the NPS through technical assistance and partnership development. Planning would include careful coordination with existing agencies, organizations, and private landowners to ensure that trail alignments do not conflict with existing land uses and ownership. The NPS could develop and manage new segments of the Rim of the Valley Trail within the expanded boundary of SMMNRA.

Recreational Opportunities and Access

Inclusion in the SMMNRA boundary would give NPS the authority to expend funds on creating new trails and other facilities where appropriate. As requested, and contingent on funding, the NPS would provide technical assistance to surrounding communities (the San Fernando Valley and other urban areas) to enhance access to SMMNRA and other open space areas through trail connections and public transportation options and to increase the overall diversity of public parklands.

In coordination with existing Los Angeles River initiatives, emphasis would be placed on creating more opportunities for recreation, interpretation, and education along the Los Angeles River and its tributaries, including the Arroyo Seco and Tujunga Wash. The NPS could develop partnerships with existing nature centers and recreational facilities to facilitate access and serve as local gateways to the broader Rim of the Valley Corridor area.

Providing improved access and alternative transportation opportunities to existing recreational opportunities and parks would be explored, particularly for communities that lack adequate access to parks and open space. This could occur through expansion of the existing shuttle system operated by the Mountains Recreation and Conservation Authority or through coordination and cooperation with existing transit agencies. For example, the NPS and partner agencies could explore creating recreational linkages to the Orange Line, a major public transportation corridor which connects downtown Los Angeles with San Fernando Valley communities.

The NPS would emphasize and promote the public health benefits of outdoor recreation. Children in communities that do not have adequate access to outdoor recreation tend to have higher rates of childhood diseases related to obesity, such as diabetes. Expanding SMMNRA into urban areas to the north and east would provide new close-to-home opportunities for those communities that do not have adequate parks and recreation areas. The NPS would conduct outreach to local communities, organizations, and schools to promote opportunities to visit the parks for healthy recreational opportunities.

The NPS could also coordinate and collaborate with the U.S. Forest Service's Southern California Consortium to conduct outreach on recreational and learning opportunities with local schools and youth.

Education and Interpretation

The lands within the proposed boundary adjustment in alternative C would provide new opportunities for educational and interpretive programs and more engagement of urban communities. The NPS would seek opportunities to coordinate interpretive and educational messaging and programs in partnership with existing agencies and organizations. Interpretive themes related to nationally significant resources throughout the Rim of the Valley Corridor area would be emphasized (e.g. biodiversity, geology, paleontology, technology, economic development, and the interaction between human culture and the environment). With the Los Angeles River and its tributaries providing close-to-home physical and recreational connections, watershed interpretive themes could also be emphasized. Cultural resources in downtown Los Angeles and other urban communities would also provide opportunities to interpret the rich cultural heritage of the region.

Topics currently interpreted at SMMNRA such as film production, Native American history and pre-history, and the significance of Mediterranean ecosystems would be expanded by the inclusion of new sites and resources that represent these

Alternative C (NPS Preferred Alternative)

Rim of the Valley Boundary Adjustment

National Park Service
U.S. Department of the Interior

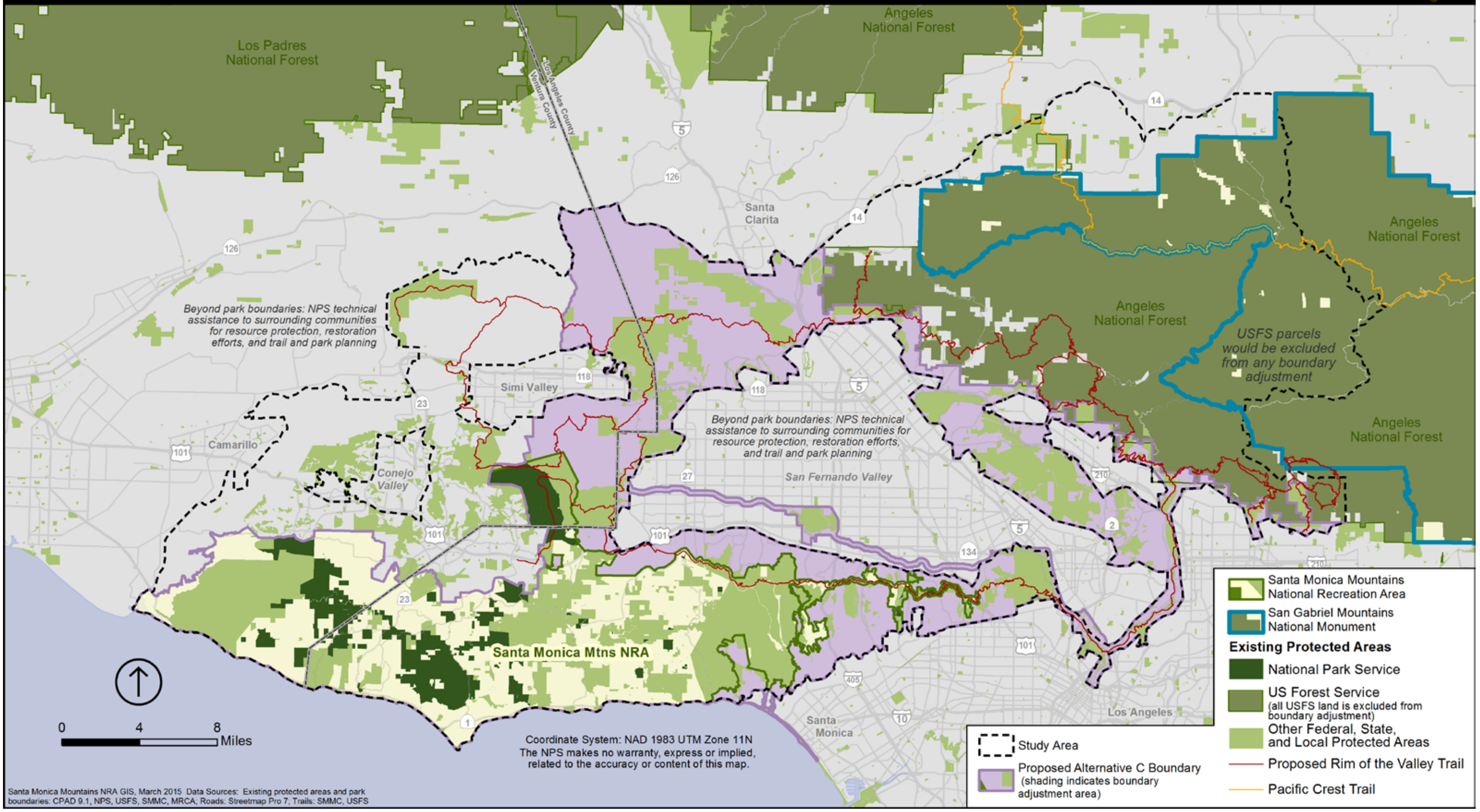


Figure 5-4: Alternative C - Rim of the Valley Boundary Adjustment (NPS Preferred Alternative)

themes. For example, the NPS currently interprets film history and film production at Paramount Ranch within SMMNRA. With the proposed boundary expansion, Griffith Park and Corriganville Ranch, two important sites in film history would be added to SMMNRA and would expand and enhance interpretation of this theme.

Resource Protection

The alternative C boundary adjustment would also add to SMMNRA numerous natural and cultural resources that would expand and enhance protection of significant resources within SMMNRA, including portions of the Santa Monica-Sierra Madre wildlife corridor within the Simi Hills and Santa Susana Mountains. Numerous studies have documented the importance of this corridor for wildlife movement (Spencer et al. 2010, Penrod et al. 2006). Also included are native grasslands, more oak woodland types, and habitat for a range of additional rare and sensitive species. The San Gabriel Mountains foothills included in alternative C contain alluvial fan sage scrub, a distinct and sensitive natural community that has adapted to the unique fluvial processes of the Los Angeles basin. The boundary adjustment would also include the Verdugo Mountains, more connections to Griffith Park, and remnant riparian areas along the Los Angeles River which are important ecological stepping stones between the Santa Monica and San Gabriel mountains.

The boundary adjustment in alternative C would include significant cultural resources related to space exploration and the Cold War that are located in the Arroyo Seco corridor and Simi Hills. Other significant historical sites that reflect the settlement and economic development of the region include the Pico Well No.4 National Historic Landmark, portions of the Butterfield Overland Trail, the Arroyo Seco Parkway, Route 66, and the El Pueblo de Los Angeles Historical Monument. The Simi Hills and Santa Susana Mountains contain numerous archeological sites, including rock art examples not found in the Santa Monica Mountains. Many sites of architectural significance would also be within the boundary adjustment, including the Gamble House National Historic Landmark in Pasadena.

With a focus on engaging urban populations, the NPS could create a network of partners to develop natural and cultural resource management programs that would engage the public through expanded citizen science, volunteer programs, education, and interpretation. The NPS could partner with stakeholders to develop a collaborative land protection program that includes both cooperative conservation planning tools and strategic land acquisition.

Including such resources in SMMNRA would allow the NPS to use its full range of tools and authorities for resource protection including land acquisition, inventorying and monitoring, and a variety of resource protection projects. The current inventory and monitoring program of SMMNRA would be expanded to include the new areas and would inform decision-making for resource management.

As in alternative B, the NPS could provide technical assistance in scientific study, restoration opportunities, and documentation of cultural and natural resources. Universities and other partners would be engaged to assist in building scientific knowledge to support decision-making.

Priorities for Land Conservation

In recent years, various agencies and park districts have acquired large areas of open space in areas such as the Verdugo Mountains, Simi Hills, and eastern Santa Susana Mountains. In alternative C, the NPS would work with partners to identify common priorities for land conservation that would emphasize protecting and enhancing habitat connectivity between existing parks and open spaces. Agencies and organizations within the added areas would likely continue to acquire lands for conservation and open space as permitted under existing authorities. The NPS would focus land acquisition on protection of core habitat areas in SMMNRA and in protecting nationally significant resources and wildlife corridors within the newly added areas. Having such areas within the SMMNRA boundary means the NPS would have authority to purchase lands for protection or expend funds on other means of land conservation such as easements.

The NPS would also collaborate regionally to share research and participate in strategies to protect important wildlife corridors beyond the national recreation area boundaries. As in alternative B, emphasis would be placed on private land stewardship and providing technical assistance to public and private landowners, as requested, to conserve these resources.

In more developed areas, the NPS could contribute to restoration efforts that could enhance biodiversity and create more resilient biological systems. The NPS could actively support current restoration efforts on the Los Angeles River, Arroyo Seco, and Tujunga Wash. Such efforts provide excellent opportunities to restore riparian areas and enhance regional habitat connectivity. The NPS could also explore collaborative restoration efforts to create new habitat linkages between the Santa Monica and San Gabriel mountains

Cultural Resources Documentation and Protection

As in alternative B, the NPS would work collaboratively to document cultural resources within the newly added areas. Although comprehensive inventories have been completed of cultural resources in SMMNRA, for California State Parks, and recently for the City of Los Angeles, other portions of the expansion area are not as well documented. Additional inventories, documentation and mapping of cultural sites could be undertaken. Information about sensitive sites need not be released to the public; details and locations may need to be withheld in order to protect the resources. The NPS could facilitate the development of a network of cultural resources stakeholders including historical societies, institutions, and other organizations. This network could explore and make recommendations related to cultural resources protection and interpretation.

Significant sites could be evaluated for listing on the National Register of Historic Places or designation as a national historic landmark. Such designations would help to document the historical, cultural and archeological significance of the area and could enhance funding and technical assistance opportunities.

Many sites within the study area are important to Native American tribes and other organizations. Tribes, organizations and others could continue to work with public and private landowners and managers to protect sacred sites and archeological resources, and to obtain access or ownership of important sites for ceremonial, interpretive, and educational purposes.

Operations and Maintenance

Existing land managers would continue to operate and manage their land and facilities. NPS would be responsible for operations and maintenance of lands that it acquires. Through cooperative management agreements, the NPS would have the opportunity to share staff, facilities and funding with partner agencies, streamlining operational efficiencies.

Existing staff at SMMNRA would contribute toward operation of the expanded park area. However, additional staffing and expertise needed for the expanded area would include:

- **Natural resource management staff (~2-4 FTE)** - to conduct inventory and monitoring of resources and to provide technical expertise on conservation of wildlife corridors and habitat restoration in urban areas.
- **Staff with expertise in cultural resources management (~1-2 FTE)** - to document and manage the expanded scope of cultural resources within the newly added area.
- **Outreach coordinator and interpretive rangers (~3-5 FTE)** - to create and **develop visitor programs.**
- **Law enforcement rangers (~2-4 FTE)** - to protect resources and ensure a safe visitor experience.
- **Maintenance and facilities management staff (~2-4 FTE)** - would be required to care for any additional lands that the NPS would acquire and for any new facilities that the NPS would construct (trails, roads, etc.).
- **Planning staff (~1-2 FTE)** – to provide expertise in land conservation tools and strategies, park and trail development, and community partnerships.

SMMNRA would also work to expand its network of volunteers to assist in park operations and resource management activities in the newly added park areas. As described in the no action alternative, volunteers for SMMNRA contribute many thousands of hours to all aspects of park management. SMMNRA and agency partners would also continue to rely on private fundraising through "friends" and partner groups such as the Santa Monica Mountains Fund.

Funding and Costs

Operational Costs

Initially, existing SMMNRA staff and operations would support the newly added areas. Initial staffing needs would primarily be for park planning, outreach, and coordination with other agencies and organizations. Increased staffing for the expanded SMMNRA would happen incrementally over time as implementation planning specifies objectives and as the NPS acquires land. Following completion of a management plan that would identify more specific goals for land protection, resource management, facilities, education, and outreach, more detailed operational costs and staffing needs would be identified. The annual operating cost for SMMNRA was $8.6 million in fiscal year 2012. These operation costs primarily support staffing. SMMNRA would also leverage NPS sources of funding beyond the annual operating costs for planning efforts, specific resource management objectives, and for the construction of visitor facilities. The annual NPS operating budget for the expanded SMMNRA in alternative C could range from $9.5-$10.5 million, an increase of $900,000-$1.9 million above SMMNRA's 2012 operating budget. The level of staffing needs would reflect the emphasis of future management (e.g. the amount and type of land acquired by NPS, ability to accomplish objectives through partnerships).

Land Acquisition Costs

NPS funding for land acquisition would continue to be competitive. From 2001-2011, SMMNRA received approximately $14 million for land acquisition, acquiring nearly 1,800 acres of land. Additional funding would be required to continue implementation of current land acquisition priorities in the Santa Monica Mountains and to pursue targeted land acquisition in the newly added areas. The NPS and partner agencies could also explore new opportunities to leverage funding for land acquisition.

Planning and Implementation Projects

Planning and implementation projects are not reflected in the projected operational budget. If the boundary adjustment were authorized by Congress, SMMNRA would be eligible to receive funding for planning and projects through the NPS funding sources. For example, the NPS could provide initial planning funds for a management plan which would define management priorities, more specific actions, and funding needs for the new areas. The management plan would be completed in collaboration with the partnership agencies. A management plan for a partnership park the size and scale of which is proposed in alternative C would likely take 4 to 5 years to complete and could cost between $500,000 and $700,000. Additional NPS funding may also be available for specific projects such as trail development and interpretive materials. A management plan would identify more specific implementation needs.

Alternative D: Regional Rim of the Valley Boundary Adjustment with Cooperative Conservation Areas

Concept

Alternative D includes a boundary adjustment to Santa Monica Mountains National Recreation Area (SMMNRA) and authority for NPS to provide technical assistance to surrounding local communities, agencies, and private landowners to maintain habitat connectivity, protect significant resources, and plan for new parks and trails.

The alternative D boundary adjustment would add 313,000 acres to SMMNRA's authorized boundary to connect large natural areas and promote long-term resiliency of the significant natural resources within SMMNRA and the broader study area. The boundary expansion would also provide more recreational opportunities. The SMMNRA boundary addition would include most areas within the Rim of the Valley Corridor with the exception of lands owned and managed by the U.S. Forest Service as part of the Angeles National Forest and San Gabriel Mountains National Monument.

For critical habitat linkages outside of the proposed boundary addition, SMMNRA would be authorized to partner and provide technical assistance to land managers and private landowners to maintain and enhance habitat connections to the national forests (as in alternative B).

Proposed Area

SMMNRA Boundary Adjustment

The boundary adjustment would add 313,000 acres to SMMNRA. Approximately 23% of the new area is protected by existing land management agencies and organizations (*Figure 5-5: Alternative D - Regional Rim of the Valley Boundary Adjustment with Cooperative Conservation*).

The proposed boundary adjustment would add most of the areas within the Rim of the Valley Corridor study area to SMMNRA. Areas that would be included are the Los Angeles River and Arroyo Seco corridors, the Verdugo Mountains-San Rafael Hills, the San Gabriel Mountain foothills, the Upper Santa Clara River, the Santa Susana Mountains, the Simi Hills, and the Conejo Hills-Las Posas Hills. Areas within the Santa Monica Mountains Zone such as Griffith Park and the western escarpment of the Santa Monica Mountains near California State University Channel Islands would also be included. This boundary adjustment includes the Santa Monica-Sierra Madre wildlife linkage within the study area.

Lands within the authorized boundaries of the Angeles National Forest and San Gabriel Mountains National Monument would not be included in the boundary adjustment. The National Park Service (NPS) and U.S. Forest Service would continue to explore partnership opportunities similar to the no action and the cooperative conservation partnerships alternatives.

Cooperative Conservation Areas

Habitat linkages between the study area, the Los Padres and Angeles national forests, and San Gabriel Mountains National Monument would not be part of the expanded SMMNRA. However, the NPS would be authorized to partner with and provide technical assistance to land managers and private landowners to maintain and enhance habitat connectivity (as in alternative B).

Management Approach

Management by existing agencies, local governments, organizations, private landowners, and institutions as described under the no action alternative would continue under alternative D. Agencies and local governments would maintain authorities and land management responsibilities. However, the NPS would become another partner in the management of the additional areas with authority to expend funds on land protection, visitor facilities, interpretive and educational programs, and inventorying and monitoring of resources within the area.

NPS Roles

Congress would authorize NPS to manage the new additions in partnership with existing land management agencies, private landowners, and organizations. The NPS would work collaboratively with public and private partners to protect significant resources, expand public enjoyment opportunities, and provide interpretation and education about the area's resources.

The NPS could expend funds on land acquisition, and the planning and development of visitor facilities such as trails, waysides, etc. Land acquisition would be completed in partnership with other agencies and organizations. Any NPS land acquisition would be targeted, with an emphasis on protecting significant resources, maintaining and enhancing habitat connectivity, and providing recreational opportunities. The NPS would only consider purchase of land from willing sellers. The NPS would have no land use regulatory authority for lands that it does not own.

To facilitate habitat connectivity between the expanded boundary, the Los Padres and Angeles national forests, and San Gabriel Mountains National Monument, the NPS would be

authorized to engage in cooperative conservation partnerships and provide technical assistance to public and private landowners, organizations, and institutions north of the study area (similar to alternative B). There would be no NPS land acquisition or management of these areas.

As in alternative B, NPS would also expand its capacity to provide technical assistance to agencies and organizations in the Rim of the Valley Corridor area to increase outreach efforts to local communities. NPS technical assistance could also be provided for natural resource protection and restoration, trail and park planning, and to bring agencies, organizations, and landowners together to achieve common goals.

Other Federal, State and Local Land Management Agencies and Organizations

New planning efforts would explore opportunities for agencies to collaborate and set shared goals for resource protection, connecting parklands and trails, restoration objectives, and providing coordinated interpretive and educational opportunities that highlight nationally significant resources in the newly added areas. The NPS would expand the current cooperative management agreement with California State Parks, the Santa Monica Mountains Conservancy, and MRCA to provided coordinated management in the boundary addition. Through the cooperative management agreements, the NPS, U.S. Forest Service, U.S. Fish and Wildlife Service, and Bureau of Land Management could explore opportunities for entering into agreements to leverage resources for integrated resource restoration and strategies for maintaining and restoring wildlife corridors. Cooperative management agreements could also allow the NPS and U.S. Forest Service to share staffing for visitor services, streamlining existing efforts and capitalizing on the expertise of each agency.

Implementation of conservation efforts for cooperative conservation areas outside of the SMMNRA boundary adjustment would be executed by state and local governments, private entities, and other federal agencies. The NPS would provide technical assistance to these agencies and organizations where needed.

Local Land Use and Regulatory Authorities

The SMMNRA boundary expansion would not establish additional regulatory or land use authorities over local governments. NPS land management policies and regulations would only apply to lands that the NPS acquires.

Non-Governmental Organizations and Private Land Stewardship

The NPS would work cooperatively with conservation organizations and private landowners upon request to undertake cooperative conservation efforts (easements, grants, technical assistance for best management practices, etc.) that do not require federal land acquisition. As described in alternative B, this could include easements, developer dedications, targeting federal and state incentive programs for private land conservation, and technical assistance from agencies and organizations for land conservation and habitat restoration.

For the cooperative conservation areas outside of the SMMNRA boundary addition, private land stewardship would be a key component of conservation efforts. An implementation plan would identify a range of private land stewardship strategies that could maintain habitat linkages and protect habitat if implemented.

Local planning and ordinances would continue to determine appropriate uses for private lands. Private land stewardship actions would be voluntary on the part of the landowner.

Rim of the Valley Trail

Because the expanded SMMNRA would encompass the entire Rim of the Valley Trail, this would provide the NPS with opportunities to own or manage new segments of the trail throughout its planned route. Other agencies and organizations would continue to develop proposed segments of the Rim of the Valley Trail. Overall planning and implementation of the Rim of the Valley Trail could be supported by the NPS through technical assistance and partnership development. Planning would include careful coordination with existing agencies, organizations, and private landowners to ensure that trail alignments do not conflict with existing land uses and ownership.

Recreational Opportunities and Access

Inclusion in the SMMNRA boundary would give NPS the authority to expend funds on facilities to support recreation and public enjoyment. Because alternative D would also include larger areas of undeveloped open space, the NPS would evaluate and explore opportunities for acquiring lands to provide new recreational opportunities. The NPS would expend funds on creating new trails and other facilities where appropriate. As requested and contingent on funding, the NPS would provide technical assistance to surrounding communities (the San Fernando Valley and other urban areas) to enhance access to SMMNRA and other open space areas through trail connections and public transportation options and to increase the overall diversity of public parklands.

Providing improved access and alternative transportation opportunities to recreational opportunities and parks would be explored, particularly for communities that lack adequate access to parks and open space. This could occur through expansion of the existing shuttle contracts operated by the Mountains Recreation and Conservation Authority or through coordination and cooperation with existing transit agencies. For example, the NPS and partner agencies could explore cre-

Alternative D

Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas

National Park Service
U.S. Department of the Interior

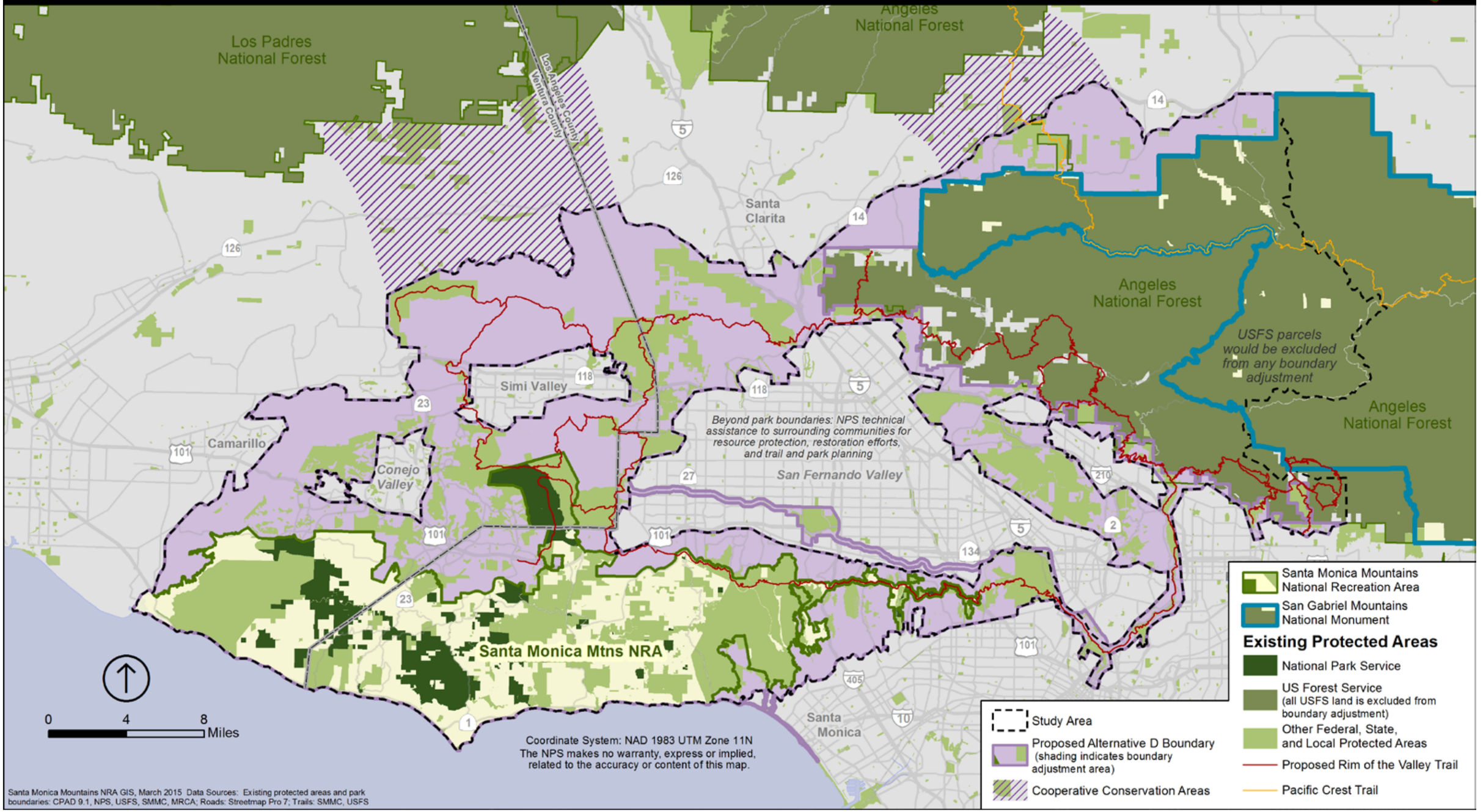


Figure 5-5: Alternative D - Regional Rim of the Valley Boundary Adjustment with Cooperative Conservation

ating recreational linkages to the Orange Line, a major public transportation corridor which connects downtown Los Angeles with San Fernando Valley communities.

As in alternative C, expanding SMMNRA into urban areas northward and eastward would provide new close-to-home opportunities for those communities that currently do not have adequate parks and recreation areas. The NPS would conduct outreach to local communities, organizations, and schools to promote opportunities for healthy recreation. The NPS could also coordinate and collaborate with the U.S. Forest Service's Southern California Consortium to conduct outreach on recreational and learning opportunities with local schools and youth.

Education and Interpretation

Educational and interpretive opportunities within the expanded SMMNRA would be similar to alternative C. The NPS would seek opportunities to coordinate interpretive and educational messaging and programs in partnership with existing agencies and organizations. Interpretive themes related to nationally significant resources throughout the Rim of the Valley Corridor area would be emphasized (e.g. biodiversity, geology, paleontology, technology, economic development, and the interaction between human culture and the environment). Cultural resources in downtown Los Angeles and other areas in the Rim of the Valley Corridor area provide new opportunities to interpret the rich cultural heritage of the region.

Topics currently interpreted at SMMNRA such as film production, Native American history and pre-history, and the significance of Mediterranean ecosystems would be expanded by the inclusion of new sites and resources. New cultural themes would include architecture, resource extraction and production, space exploration, astronomy, and the Cold War.

Resource Protection

Significant cultural and natural resources described in the alternative C boundary adjustment would be included in alternative D. In addition to these resources, alternative D would include rare endemic plant and fossil resources associated with Conejo volcanic geologic features in the Conejo Mountain-Las Posas Hills area. This area also includes a western wildlife corridor connection to the Santa Susana Mountains. Alternative D would also include the Upper Santa Clara River area which is home to more sensitive plant community types than any other portion of the study area.

Within the boundary adjustment area, the NPS would partner with stakeholders to develop a collaborative land protection program that includes both cooperative conservation planning tools and strategic land acquisition. The current inventory and monitoring program of SMMNRA would be expanded to the new areas and would inform decision-making for resource management. The NPS could provide technical assistance in scientific study, restoration opportunities, and documentation of cultural and natural resources. Universities and other partners would be engaged to assist in building scientific knowledge to support decision-making.

Priorities for Land Conservation

The larger scope of alternative D provides the most opportunities for the NPS to play a direct role in long-term conservation of regional wildlife corridors through land acquisition and other means of land protection such as private land stewardship. Agencies and organizations within the added areas would continue to acquire lands for conservation and open space as permitted under existing authorities. The NPS would focus land acquisition on protection of core habitat areas in SMMNRA and in protecting critical wildlife corridors within the newly added areas.

The NPS would also share research and participate in strategies to protect important wildlife corridors beyond the national recreation area boundaries. As in alternatives B and C, emphasis would be placed on private land stewardship and providing technical assistance to public and private landowners, as requested and contingent on funding, to conserve these resources.

Restoration Opportunities

In more developed areas, the NPS would contribute to restoration efforts that could enhance biodiversity and create more resilient biological systems. The NPS could actively support current restoration efforts on the Los Angeles River, Arroyo Seco, and Tujunga Wash. Opportunities could also be explored, in cooperation with other agencies and landowners, for the Arroyo Simi and Calleguas Creek. Such efforts provide excellent opportunities to restore riparian areas and enhance regional habitat connectivity. Restoration objectives could be explored that create new habitat linkages between the Santa Monica and San Gabriel mountains. As in alternatives B and C, existing federal and state programs that provide financial incentives for private landowners to restore habitat could be leveraged to achieve restoration objectives.

Cultural Resources Documentation and Protection

The NPS would work collaboratively to document cultural resources within the newly added areas. Additional inventories, documentation and mapping of cultural sites could be undertaken. Information about sensitive sites need not be released to the public; details and locations may need to be withheld in order to protect the resources.

Significant sites could be evaluated for listing on the National Register of Historic Places or designation as a national historic landmark. Such designations would help to document the historical and archeological significance of the area and could enhance funding and technical assistance opportunities.

Many sites within the study area are important to Native American tribes and organizations with ties to the area. These organizations and others could continue to work with landowners and managers to protect sacred sites and archeological resources, and to obtain access or ownership of important sites for ceremonial, interpretive, and educational purposes.

Operations and Maintenance

NPS would be responsible for operations and maintenance of lands that it acquires. Existing land managers would continue to operate and manage their land and facilities. Through cooperative management agreements, the NPS would have the opportunity to share staff, facilities and funding with partner agencies, streamlining operational efficiencies.

Existing staff at SMMNRA would contribute towards operation of the expanded park area. However, additional staffing and expertise needed for the expanded area would be similar to alternative C and would include:

- **Natural resource management staff (~3-6 FTE)** - to conduct inventory and monitoring of resources and to provide technical expertise on conservation of wildlife corridors and habitat restoration in urban areas.
- **Staff with expertise in cultural resources management (~1-2 FTE)** - to document and manage the expanded scope of cultural resources within the newly added area.
- **Outreach coordinator and interpretive rangers (~3-5 FTE)** - to create and develop visitor programs.
- **Law enforcement rangers (~2-5 FTE)** - to protect resources and ensure a safe visitor experience.
- **Maintenance and facilities management staff (~2-5 FTE)** - would be required to care for any additional lands that the NPS would acquire and for any new facilities that the NPS would construct (trails, roads, etc.).
- **Planning staff (~2-4 FTE)** – to provide expertise in land conservation tools and strategies, park and trail development, and community partnerships.

SMMNRA would also work to expand its network of volunteers to assist in park operations and resource management activities in the newly added park areas. As described in the no action alternative, volunteers for SMMNRA contribute many thousands of hours to all aspects of park management. SMMNRA and agency partners would also continue to rely on private fundraising through "friends" and partner groups such as the Santa Monica Mountains Fund.

Funding and Costs

Operational Costs

Initially, existing SMMNRA staff and operations would support the newly added areas. Initial staffing needs would primarily be for park planning, outreach, and coordination with other agencies and organizations. Increased staffing for the expanded SMMNRA would happen incrementally over time as implementation planning specifies objectives and as the NPS acquires land in the area. Following completion of a management plan that would identify more specific goals for land protection, resource management, facilities, education, and outreach, more specific operational costs and staffing needs would be identified. The annual operating cost for SMMNRA was $8.6 million in fiscal year 2012. These operational costs primarily support staffing. SMMNRA would also leverage NPS sources of funding beyond the annual operating costs for planning efforts, specific resource management efforts, and for the construction of visitor facilities. The annual NPS operating budget for the expanded SMMNRA could range from $10-$12 million, an increase of $1.4-3.4 million above SMMNRA's 2012 operating budget. The level of staffing needs would reflect the emphasis of future management (e.g. the amount and type of land acquired by NPS, ability to accomplish objectives through partnerships).

Land Acquisition Costs

NPS funding for land acquisition would continue to be competitive. From 2001-2011, SMMNRA received approximately $14 million for land acquisition, acquiring nearly 1,800 acres of land. Additional funding would be required to continue implementation of current land acquisition priorities in the Santa Monica Mountains and to pursue targeted land acquisition in the newly added Rim of the Valley areas. The NPS and partner agencies could also explore new opportunities to leverage funding for land acquisition.

Planning and Implementation Projects

Planning and implementation projects are not reflected in the projected operational budget. If the boundary adjustment were authorized by Congress, SMMNRA would be eligible to receive funding for planning and projects through the NPS. For example, the NPS could provide initial planning funds for a management plan which would define management priorities, more specific actions, and funding needs for the new areas. The management plan would be completed in collaboration with the partnership agencies. Management for a partnership park the size and scale of which is proposed in alternative D would likely take 4 to 5 years to complete and could cost between $500,000 and $700,000. Additional NPS funding may also be available for specific projects such as trail planning and development and interpretive materials.

Table 5-3 Comparative Summary of Alternatives

	Alternative A: Continuation of Current Management (No Action)	Alternative B: Cooperative Conservation Partnership	Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)	Alternative D: Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas
Concept	This "no action" alternative provides a baseline from which to compare the other alternatives. Current programs and policies of existing federal, state, local and non-profit organizations would continue at existing levels and current conditions and trends would continue. NPS would have no role in the study area beyond existing national park units and existing financial and technical assistance programs.	Congress would authorize and direct SMMNRA to facilitate a partnership of public and private landowners, organizations, and institutions to establish an interconnected system of parks, habitat, and open space in the Rim of the Valley Corridor study area. The NPS would continue to manage SMMNRA in partnership with other agencies and organizations. There would be no boundary adjustment to SMMNRA. Beyond SMMNRA, the NPS would work through existing authorities to provide technical assistance to partners to achieve the goals of the plan.	This alternative includes a boundary adjustment for SMMNRA to protect habitat and provide more recreational opportunities to a broad range of urban audiences, including many who are under-represented in national parks and underserved by state and local parks. The SMMNRA boundary adjustment would generally include the portions of the study area bordering the most populous areas of the Los Angeles region. SMMNRA would be authorized to partner and provide technical assistance to land managers and private landowners to protect habitat connections to the national forests and to assist local communities in planning for recreational opportunities.	Alternative D includes a boundary adjustment to SMMNRA and authority for NPS to provide technical assistance to surrounding local communities, agencies, and private landowners to maintain habitat connectivity, protect significant resources, and plan for new parks and trails. The SMMNRA boundary adjustment would include the Rim of the Valley corridor area outside of the Angeles National Forest and San Gabriel Mountains National Monument and would provide opportunities for long-term protection of the significant resources documented throughout the study area. Beyond the expanded SMMNRA boundary, the NPS would be authorized to partner and provide technical assistance to land managers and private landowners to protect habitat connections and to assist local communities in planning for recreational opportunities.
Proposed Area	There would be no new NPS unit or boundary adjustments to SMMNRA.	There would be no new NPS unit or boundary adjustments to SMMNRA. The geographic focus of the partnership and NPS technical assistance would generally include the Rim of the Valley study area and habitat linkage areas important for protection of significant resources, including areas connecting the Santa Susana Mountains to the Topatopa, and areas connecting the San Gabriel Mountains to the Sierra Pelona.	The proposed SMMNRA boundary adjustment would include the mountains surrounding the San Fernando and La Crescenta Valleys; and the Los Angeles River and Arroyo Seco corridors that connect mountain areas. Lands within the authorized boundaries of the Angeles National Forest and San Gabriel Mountains National Monument would not be included in the boundary adjustment. This boundary adjustment would add an additional 173,000, acres to SMMNRA. Approximately 40% of this new area would include lands currently protected by other land management agencies and organizations.	The proposed SMMNRA boundary adjustment would include areas within the Rim of the Valley Corridor study area outside of the SMMNRA authorized boundary. Lands within the authorized boundaries of the Angeles National Forest and San Gabriel Mountains National Monument would not be included in the boundary adjustment. This boundary adjustment would add an additional 313,000, acres to SMMNRA. Approximately 23% of the new area includes lands protected by existing land management agencies and organizations.

Table 5-3 Comparative Summary of Alternatives (continued)

	Alternative A: Continuation of Current Management (No Action)	Alternative B: Cooperative Conservation Partnership	Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)	Alternative D: Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas
Management Approach- NPS Roles	SMMNRA would continue to be managed according to its authorized purpose. Any NPS management activities in areas beyond the current national recreation area boundary would be limited to projects that further SMMNRA's defined purpose. For instance, SMMNRA would continue to operate outreach programs in downtown Los Angeles. Outside SMMNRA, the NPS would continue to offer technical and financial assistance to area communities through existing programs. The Juan Bautista de Anza and Old Spanish national historic trails would continue to mark and interpret these trails and work with partners to establish recreational routes within the study area.	Congressional authorization would specifically direct SMMNRA to facilitate the development of a cooperative conservation plan for the Rim of the Valley Corridor area, including for key habitat linkages to the Los Padres and Angeles national forests and San Gabriel Mountains National Monument. The USFS, other public land management agencies, organizations and landowners, would participate in the development of the plan. The NPS would provide initial planning and administrative assistance for a specified time period to enable completion of this coordinated management plan. The conservation plan would identify a range of public and private mechanisms and strategies to implement common goals and objectives. The NPS would have no authority to acquire or manage lands outside of SMMNRA. Following completion of the plan, SMMNRA would provide continued technical assistance to the partnership for implementation, including for resource management, trail and recreation planning, and developing interpretive and educational materials.	Congress would authorize SMMNRA to manage the new additions in the same manner as SMMNRA, in partnership with existing land management agencies and organizations. NPS management of the new park areas would emphasize expanded partnership efforts with California State Parks and other organizations focused on connecting people to the Rim of the Valley area through new recreational opportunities, outreach, educational, and interpretive programs. NPS land acquisition would continue to be completed in partnership with other agencies and organizations. NPS land acquisition would be targeted to protect significant resources and key recreational connections. The NPS would only consider purchase of land from willing sellers. The NPS would provide technical assistance to surrounding communities (valleys and urban areas) to enhance access to SMMNRA through trail connections and public transportation options and to increase the diversity of public parklands.	Same as alternative C, plus: To facilitate habitat connectivity between the Santa Susana Mountains and the Topatopa Mountains and the connection between the San Gabriel Mountains and Sierra Pelona, the NPS would be authorized to engage in cooperative conservation partnerships and provide technical assistance to public and private landowners, organizations, and institutions north of the study area (similar to alternative B). There would be no NPS land acquisition or management of these areas.

Table 5-3 Comparative Summary of Alternatives (continued)

	Alternative A: Continuation of Current Management (No Action)	Alternative B: Cooperative Conservation Partnership	Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)	Alternative D: Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas
Management Approach- Other Federal, State and Local Land Management Agencies and Organizations	Current programs and policies of existing federal, state, and local land management agencies in the Rim of the Valley Corridor study area would continue at current levels and current conditions and trends would continue.	Current programs, policies and conservation efforts by existing federal, state, and local land management agencies in the Rim of the Valley Corridor study area would continue. Other federal, state, local and private organizations could participate on an advisory committee with the NPS to collaborate on the development of the conservation plan for Rim of the Valley Corridor areas and habitat linkages outside of SMMNRA. Implementation of the conservation plan for these areas would largely be executed by state and local governments, private entities, and other federal agencies.	Current programs, policies and conservation efforts by existing federal, state, and local land management agencies in the Rim of the Valley Corridor study area would continue. The NPS would work with local, state, and federal agencies to administer a cooperative land protection program and management framework. Proposed boundary additions to SMMNRA would not establish additional regulatory authority or land use authorities over local governments included within the boundary. NPS management policies would only apply to lands that the NPS acquires.	Same as alternative C, plus: Implementation of the conservation efforts for partnership areas outside of SMMNRA boundary adjustment would largely be executed by state and local governments, private entities, and other federal agencies. The NPS would provide technical assistance to these agencies and organizations where needed.
	Common to All: • In all alternatives, lands would continue to be managed through a variety of public and private mechanisms by federal, state and local agencies, universities, organizations and private landowners. • The Angeles National Forest and San Gabriel Mountains National Monument would continue to be managed by the USFS. • NPS and the USFS would work cooperatively on initiatives to protect resources and conduct public outreach.			
Management Approach- Private Land Stewardship	Private land conservation efforts would continue at current levels within SMMNRA and in the Rim of the Valley Corridor study area.	Private land stewardship would be a key component of the conservation plan. The plan would identify a range of optional private land stewardship strategies to maintain habitat linkages and protect habitat. Upon request, the NPS and other agencies could provide technical assistance to private landowners for conservation efforts. Local ordinances would continue to determine appropriate uses for private lands. Private land stewardship actions would be voluntary on the part of the landowner.	The NPS would work cooperatively with conservation organizations and private landowners upon request to undertake cooperative conservation efforts (easements, technical assistance, etc.) that do not require federal land acquisition. Local ordinances would continue to determine appropriate uses for private lands. Private land stewardship actions would be voluntary on the part of the landowner.	Same as alternative C, plus: For the cooperative conservation areas outside of the SMMNRA boundary adjustment, private land stewardship would be a key component of conservation efforts. A plan would identify a range of private land stewardship strategies that could maintain habitat linkages and protect habitat if implemented.

Table 5-3 Comparative Summary of Alternatives (continued)

	Alternative A: Continuation of Current Management (No Action)	Alternative B: Cooperative Conservation Partnership	Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)	Alternative D: Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas
Rim of the Valley Trail	Various agencies and organizations would likely continue to develop proposed segments of the Rim of the Valley Trail. The NPS would continue to plan and implement portions of the trail that traverse park boundaries as funds become available. NPS technical assistance in completion of the full trail would be limited to existing technical assistance and grant programs.	Planning and implementation of the trail would be supported by the NPS through technical assistance and partnerships. The trail would be owned and managed by partner agencies and organizations. The NPS could only own or manage segments of the Rim of the Valley Trail located within the current boundary of SMMNRA.	Planning and implementation of the Rim of the Valley Trail would be supported by the NPS through technical assistance and partnership development. The NPS could own or manage new segments of the Rim of the Valley Trail within the expanded boundary of SMMNRA. Outside of SMMNRA, trail segments would be owned and managed by partner agencies and organizations.	Same as alternative C, plus: Because the expanded SMMNRA would encompass the entire Rim of the Valley Trail, this would provide the NPS with opportunities to own or manage new segments of the Rim of the Valley Trail.
	Common to All: • The NPS would support completion of the Rim of the Valley Trail through partnerships and technical assistance. Once established, the Rim of the Valley Trail would be eligible for designation as a National Recreation Trail, through the existing application process, which is voluntary and initiated by trail managers.			
Recreational Opportunities and Access	The NPS would continue current outreach and other related efforts to engage urban communities. Existing agencies and organizations would continue to provide recreational opportunities for the public. Recreational access would continue to be limited in some portions of the study area.	The NPS would provide technical assistance to communities and organizations within the Rim of the Valley Corridor area to provide interpretation and education about significant resources and conservation efforts. The NPS would coordinate and collaborate with the U.S. Forest Service's Southern California Consortium to conduct outreach with schools and youth. The Southern California Consortium is a U.S. Forest Service initiative to educate underserved urban communities on the importance of natural resources. As in Alternative A, the NPS would continue current outreach and other related efforts to engage urban communities.	The NPS would work in partnership with agencies and organizations to create new recreational connections within the expanded boundary. As requested, the NPS would provide technical assistance and other partnership and programmatic roles to support trail development and recreational opportunities through existing authorities. Providing improved access and alternative transportation opportunities to existing recreational opportunities and parks would be explored, particularly for communities that lack adequate access to parks and open space. A major focus of this alternative would be developing partnerships with existing nature centers and recreational facilities to facilitate access to the Rim of the Valley Corridor area. Emphasis would be placed on creating more opportunities for recreation along the Los Angeles River and its tributaries. The NPS would emphasize and promote the public health benefits of outdoor recreation. The NPS would coordinate and collaborate with the USFS's Southern California Consortium to conduct outreach with schools and youth	Same as alternative C.

Table 5-3 Comparative Summary of Alternatives (continued)

	Alternative A: Continuation of Current Management (No Action)	Alternative B: Cooperative Conservation Partnership	Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)	Alternative D: Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas
Education and Interpretation	The NPS would continue current interpretive and educational programs within SMMNRA. Existing agencies and organizations outside of SMMNRA would continue to provide interpretive and educational programming. Opportunities to coordinate educational and interpretative programming in the study area would continue to be limited.	Public engagement in resource protection through interpretation and citizen science would be explored in the conservation plan. The NPS could coordinate interpretive and educational messaging in partnership with existing agencies and organizations throughout the cooperative conservation area.	With a focus on engaging urban populations, the NPS could create a network of natural and cultural resources partners that would develop resource management programs to engage the public through citizen science, volunteer programs, and interpretation. The NPS could coordinate interpretive and educational messaging and programs in partnership with existing agencies and organizations. Interpretive themes related to significant resources throughout the Rim of the Valley Corridor area would be emphasized (e.g. biodiversity, geology, paleontology, technology, economic development, and the interaction between human culture and the environment). With the Los Angeles River and its tributaries providing close-to-home physical, recreational connections, watershed interpretive themes would also be emphasized.	Same as alternative C.

Table 5-3 Comparative Summary of Alternatives (continued)

	Alternative A: Continuation of Current Management (No Action)	Alternative B: Cooperative Conservation Partnership	Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)	Alternative D: Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas
Resource Protection	The NPS would continue existing resource management activities, partnering with area stakeholders through the existing authorities of SMMNRA. State and local stakeholders would continue to have access to existing financial and technical assistance programs such as the Land and Water Conservation Fund (LWCF) grant program, the federal Lands to Parks Program, the Rivers, Trails and Conservation Assistance Program (RTCA), and the National Historic Landmark (NHL) program through the existing authorities and policies of these programs. Resources would continue to be managed by existing federal, state, and local agencies, nonprofit organizations, and private landowners. Coordination among agencies to protect wildlife habitat and corridors and cultural resources would continue to occur on a case-by-case basis.	The cooperative conservation plan would identify common priorities for land conservation that would emphasize new opportunities for protecting and enhancing habitat connectivity between existing parks and open spaces. Emphasis would be placed on private land stewardship and providing assistance to public and private landowners, as requested, to conserve resources. The NPS would collaborate regionally to share research and information and participate in strategies to protect important wildlife corridors. In more developed areas, the cooperative conservation plan would identify priority areas where restoration could enhance biodiversity and create more resilient biological systems. The partner agencies and organizations would also explore and make recommendations related to cultural resources protection and interpretation and would engage key educational and research institutions to implement the recommendations. Additional inventories, documentation, and mapping of cultural resources could be undertaken both on public lands and on the land of willing private landowners. This would occur on a voluntary basis and at the discretion of existing agencies and landowners. Native American organizations and tribes to the area could continue to work with agencies and landowners to protect sacred sites and archeological resources and obtain access for ceremonial, interpretive, and educational purposes where permitted.	Significant natural and cultural resources would be included and protected within the expanded boundary include resources related to native peoples and the settling of the Los Angeles area, space exploration and the Cold War, diverse oak woodlands, native grasslands, and alluvial fan sage scrub. The NPS could facilitate the development of a network of cultural resources stakeholders including historical societies, institutions, and other organizations to make recommendations related to cultural resources protection and interpretation. The NPS would partner with stakeholders to develop a collaborative land protection program that includes cooperative planning tools and strategic land acquisition. The NPS would undertake comprehensive inventorying and monitoring of natural resources within the expanded areas of SMMNRA. The NPS could provide technical assistance in scientific study, restoration opportunities, and documentation of cultural and natural resources. Additional inventories, documentation, and mapping of cultural resources could be undertaken. Native American organizations and tribes in the area could continue to work with agencies and landowners to protect sacred sites and archeological resources and obtain access for ceremonial, interpretive, and educational purposes where permitted.	Resource protection emphasis would generally be the same as alternative C. Significant natural and cultural resources in the alternative C boundary adjustment would be protected within the expanded boundary in alternative D. Additionally, alternative D would include rare, endemic plants and fossil resources associated with Conejo volcanic features, the Upper Santa Clara River area, and wildlife corridors connecting the Santa Monica Mountains to the Santa Susana and San Gabriel Mountains. For cooperative conservation areas, the NPS would collaborate regionally to share research and information and participate in strategies to protect important wildlife corridors.
	Common to All: • SMMNRA would work with partners to develop a collaborative geographic database to support decision-making in this area. Universities and other partners would be engaged to assist in building scientific knowledge to support decision-making. • Existing local, state, and federal agencies would continue to protect and conserve land within the Rim of the Valley Corridor area as permitted under current authorities.			

Table 5-3 Comparative Summary of Alternatives (continued)

	Alternative A: Continuation of Current Management (No Action)	Alternative B: Cooperative Conservation Partnership	Alternative C: Rim of the Valley Boundary Adjustment (Preferred Alternative)	Alternative D: Regional Rim of the Valley Boundary Adjustment and Cooperative Conservation Areas
Operations and Maintenance	Existing public and private landowners / managers would continue to operate and manage their land and facilities. NPS funding and staffing for operations and maintenance would remain at current levels SMMNRA.	Existing public and private landowners / managers would continue to operate and manage their land and facilities. NPS funding and staffing for operations and maintenance would remain at current levels in SMMNRA. To facilitate development of the conservation plan, the NPS would require funding for staff participation, coordination, and technical assistance.	Existing land managers would continue to operate and manage their land and facilities. SMMNRA would require additional funding for land acquisition, park operations, and maintenance. Through cooperative management agreements, the NPS would have the opportunity to share staff, facilities and funding with partner agencies. Existing staff at SMMNRA would contribute towards operation of the expanded park area. However, additional staffing and expertise needed for the expanded area would be needed.	Existing land managers would continue to operate and manage their land and facilities. SMMNRA would require additional funding for land acquisition, park operations, and maintenance. Land acquisition would be targeted for lands that protect significant resources and further the authorized purpose of SMMNRA. Through cooperative management agreements, the NPS would have the opportunity to share staff, facilities and funding with partner agencies. Existing staff at SMMNRA would contribute towards operation of the expanded park area. However, additional staffing and expertise needed for the expanded area would be needed.
	Common to All: • The NPS and partner agencies and organizations would leverage volunteer and other public engagement opportunities.			
Costs and Funding (NPS)	This alternative would require no new federal capital or operating costs other than that currently available through existing authorities. The annual operating budget for SMMNRA in FY12 was $8.6 million	Partner agencies and organizations could establish a fundraising organization or be a coordinating body for existing grant programs to assist in implementation of the conservation plan. Partner agencies and organizations could leverage funds from a variety of sources (e.g. state bonds, LWCF) to increase and prioritize funds for new parks, trails, and open space. Congressional funding would allow the NPS to provide initial planning and technical assistance for implementation. The estimated addition to SMMNRA's annual budget to support the cooperative conservation and outreach efforts is approximately $400,000 to $1,000,000. The annual NPS operating budget for the expanded SMMNRA is estimated to be approximately $9 - $9.6 million.	The NPS would require federal funding for its educational, technical assistance (planning and outreach), resource management efforts, and interpretive roles. Funding for land acquisition would continue to be minimal and competitive. Land acquisition would be targeted for lands that protect significant resources and further the authorized purpose of SMMNRA. The NPS and partner agencies could explore new opportunities to leverage funding for land acquisition. The annual NPS operating budget for the expanded SMMNRA in alternative C could range from $9.5-$10.5 million, an increase of $900,000-$1.9 million above SMMNRA's 2012 operating budget. If the boundary adjustment were authorized by Congress, SMMNRA would be eligible to receive funding for planning and projects through the NPS. Such costs would be identified through implementation plans.	Same as alternative C, however, a larger SMMNRA would require more from the NPS for educational, resource management, outreach and interpretive roles and responsibilities. Funding for land acquisition would continue to be minimal and competitive. Land acquisition would be targeted for lands that protect significant resources and further the authorized purpose of SMMNRA. The NPS and partner agencies could explore new opportunities to leverage funding for land acquisition. The annual NPS operating budget for the expanded SMMNRA could range from $10-$12 million, an increase of $1.4-3.4 million above SMMNRA's 2012 operating budget. If the boundary adjustment were authorized by Congress, SMMNRA would be eligible to receive funding for planning and projects through the NPS. Such costs would be identified through implementation plans.

Environmentally Preferable Alternative

Implementing regulations for NEPA promulgated by the CEQ require that agencies identify "the alternative or alternatives which were considered to be environmentally preferable." According to the Council on Environmental Quality, the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means, "the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources" (46 FR 18026 - 18038). According to Director's Order 12, through identification of the environmentally preferable alternative, the NPS and the public are faced with determining the relative merits of the choices before them as represented among the alternatives and must clearly state through the decision-making process what values and policies Based on analysis of the alternatives, the alternative that would best protect, preserve and enhance historic, cultural and natural resources based on analysis of NEPA Section 101-B criteria is alternative D. Therefore, alternative D is the environmentally preferable alternative.

Consistency with NEPA Section 101-B

Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations
NEPA Section 101-B requires analysis of the following criteria:

1. Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Ensuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. Preserving important historic, cultural and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;
5. Achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources. (NEPA Section 101(b))

All alternatives (A-D) would fulfill this CEQ criterion associated with management of SMMNRA and other park area resources (e.g. Juan Bautista de Anza National Historic Trail) because the NPS is required by law and policy to minimize its impacts on the environment and to preserve natural, cultural, and other park resources without impairment in its management of national parks. The proposed boundary expansion of SMMNRA in alternatives C and D would expand this resource protection to the Rim of the Valley resources. In contrast, alternative B would have a range of effects on resources, depending on the resources targeted for voluntary protection through the cooperative conservation plan in the interconnected system of parks habitat and open space. Although alternative A could also result in protection of some resources through park or agency initiatives, it would not offer holistic protection or management of Rim of the Valley resources. Because environmental stewardship in alternative B would largely be as a result of agency, organization and private landowner initiative, alternatives C and D would best meet the first CEQ criterion.

Ensuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings
The alternatives would not affect existing public right-of-ways, change existing water rights, water supply operations, water treatment operations, flood protection efforts, sanitation facilities, or other agency functions necessary to maintaining public infrastructure essential for public health and safety. As a result, all alternatives (A-D) would provide for safe and healthful surroundings. The degree of aesthetics and cultural resources preservation however would likely vary among the alternatives, with improved cultural resources protection for areas within the boundary of SMMNRA, especially where these were on NPS-owned lands. Actions associated with cultural resources on NPS-owned or other federal lands would be subject to a higher standard of preservation than those managed by non-federal agencies or organizations or those on privately owned lands. Therefore, because alternatives A and B would not provide for additional federal ownership, and because there is a potential for an increase in federally owned lands in alternatives C and D, alternatives C and D would improve protection of cultural resources and would therefore best meet this criterion.

Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences
Beneficial uses in all alternatives (A-D) would include ongoing agency, organization and private-landowner management of parklands, including providing for a wide range of recreational uses in the Rim of the Valley Corridor. In addition, a wide array of mitigation measures would be identified to avoid potential adverse impacts related to public health and safety under all alternatives. Opportunities for recreational use and public parkland protection would be improved in alternatives B, C and D. Other beneficial uses would include the potential to link urban residents to surrounding public parklands through special initiatives, especially in alternatives C and D. These alternatives call for providing improved access and alternative transportation opportunities to existing recreational oppor-

tunities and parks, particularly for communities that lack adequate access to parks and open space. As a result, alternatives C and D would best meet this criterion.

Preserving important historic, cultural, and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice

Although all alternatives would preserve some historic and cultural resources, enhancement through interpretation would occur in alternatives B, C and D, with potentially more interpretation because of NPS boundary expansion in alternatives C and D. Alternatives C and D would also protect a wider range of cultural resources, augmenting the cultural resources currently preserved in national park areas, such as SMMNRA. Because a wider range of cultural resources exists in alternative D, alternative D would offer more opportunities to protect these and would therefore best meet this criterion.

Achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities

In addition to reaching out to urban populations as noted in the above criterion, among the beneficial effects that would improve the balance between population and resource use and allow for wide sharing of Rim of the Valley Corridor resources and amenities would be the following proposals in alternatives C and D:

- Developing partnerships with existing nature centers and recreational facilities to facilitate access to the Rim of the Valley Corridor area.
- Creating more opportunities for recreation along the Los Angeles River and its tributaries.
- Promoting the public health benefits of outdoor recreation.
- Improving coordination and collaboration with the USFS's Southern California Consortium to conduct outreach with schools and youth.
- Engaging urban populations through citizen science, volunteer programs, and interpretation.
- Improving interpretive and educational messaging and programs in partnership with existing agencies and organizations.

Although individual initiative and the cooperative conservation plan could also allow for some of these actions to be implemented in alternatives A and B allowing these alternatives to meet this criterion, the programs would likely be more dispersed and less coordinated in those alternatives, therefore alternatives C and D would best meet this criterion.

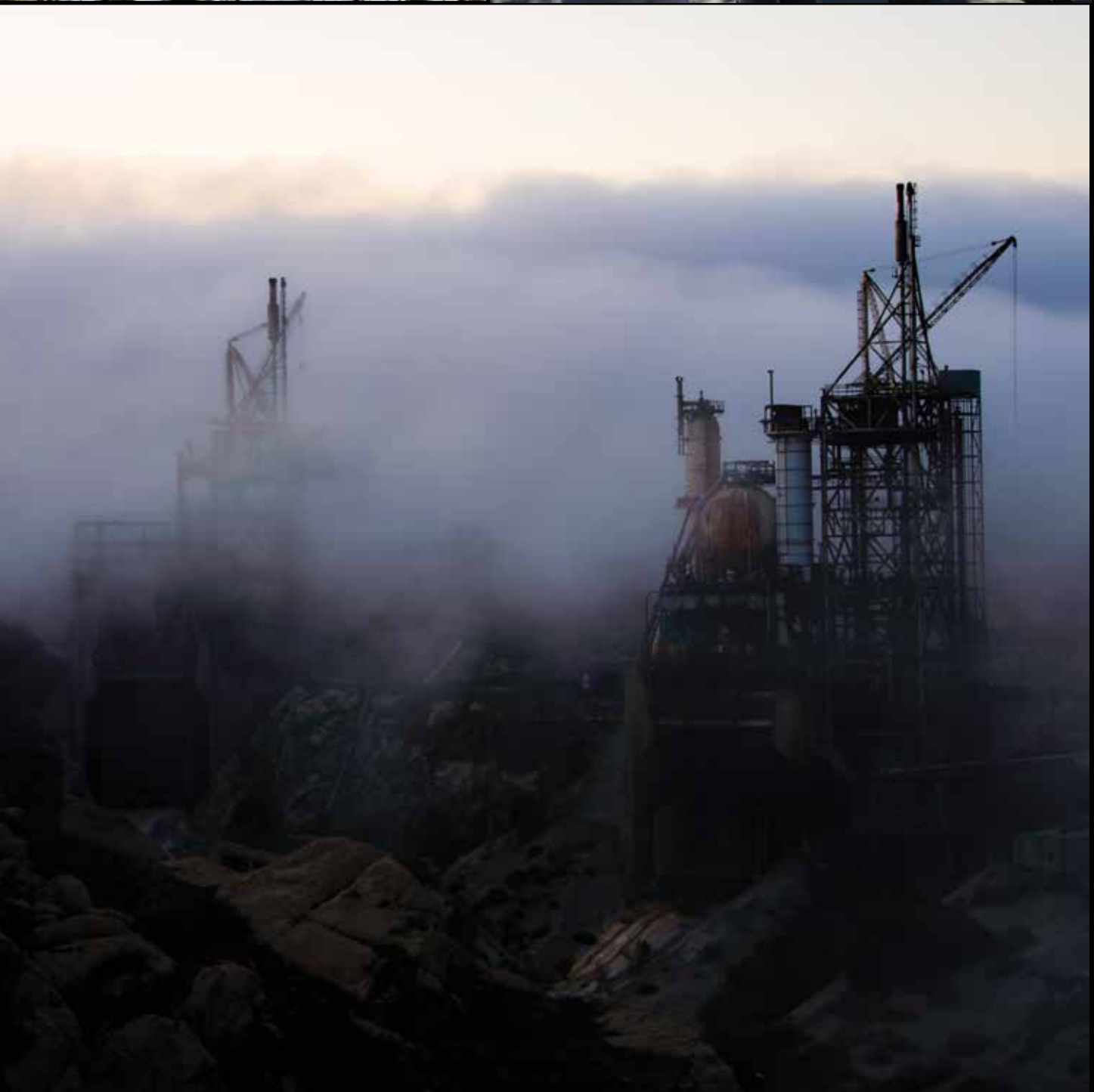
Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources

No specific proposals call for use of depletable resources in alternatives A-D. Although specific projects could later be implemented, including construction of new nature centers or other visitor facilities, such as restrooms and trailheads, these are not currently part of the alternatives. Where future facilities were constructed on NPS lands, they would need to meet Leadership in Energy and Environmental Design (LEED) silver or better standards based on NPS *Management Policies 2006*. To the extent that future facilities were identified and designed to be environmentally sensitive, all alternatives would have the potential to meet this criterion. Because, however, there are no specific plans for facilities, this criterion does not apply to the alternatives in this Environmental Assessment.

Alternatives C and D meet five of the five applicable criteria. Alternative C best meets four of the five applicable criteria, while alternative D best meets all five of the five applicable criteria and alternative A and B meet but do not best meet any of the criteria. Because alternative D best meets all five of the five applicable criteria, alternative D would best meet the Section 101-B criteria.







ENVIRONMENTAL CONSEQUENCES 6

Top left: Mountain lion in Santa Monica Mountains National Recreation Area. Top right: Wildlife viewing. Bottom photo: Rocket engine test stands at Santa Susana Field Laboratory at sunrise. Photos: NPS (top), M. Fellows/NASA (bottom).

Chapter 6: Environmental Consequences

Analysis of the environmental impacts associated with the study alternatives

Introduction

Before taking an action, the National Environmental Policy Act (NEPA) requires federal agencies to identify a range of alternatives for that action and to analyze the potential environmental consequences of that action. This chapter describes the potential environmental impacts of implementing each of the alternatives on a variety of physical, biological, cultural, social and recreational resources.

Presented below is the methodology used to identify impacts, including definitions. Analysis of impacts is according to topics. Descriptions of impacts include potential beneficial and adverse impacts as well as cumulative effects. Analysis of whether the selected alternative would impair the resources within SMMNRA will be included in the decision document. For an environmental assessment the decision document is a Finding of No Significant Impact (FONSI). The NPS issued guidance on impairment analyses in 2011.

Methods and Assumptions

Environmental consequences are determined by comparing likely future conditions under each alternative to current baseline conditions (the no action alternative). Analysis includes consideration of the context, intensity, and duration of direct and indirect effects of the alternatives. The NPS based this analysis and its conclusions on a review of existing literature, information provided by experts within the NPS, as well as outside organizations, analysis of case studies of existing programs in other locations, and the professional judgment of the study team members.

Analysis of the environmental consequences is also based on the status of the resource or the "Affected Environment." Much of the affected environment for this special resource study is described in *Chapter 2: Resource Description*. The feasibility analysis in *Chapter 3: New Park Unit Evaluation* includes descriptions of the area's land use. Supplemental information is also provided in this section, prior to the impact analysis discussion.

In most environmental documents, proposed actions are activities whose physical impacts can be estimated, modeled or projected. In this special resource study, proposed actions are often policy changes and plans with no immediate physical impact on land or resources. As a result, this analysis is a programmatic one, rather than one based on specific information about the type and location of facilities.

Given the broad nature of a special resource study, impact analysis is also broad and avoids speculation as to site-specific impacts. . The outcome of the study will be a recommendation from the Secretary of the Interior to Congress. Upon receiving the recommendation, Congress may take action, wait or take another action not identified in this study. If Congress takes action, then new environmental analysis would likely be undertaken prior to implementation of specific actions or as directed by legislation.

Methodology

This section contains the methods and criteria used to assess impacts for specific resource topics. The definitions of impacts adhere to those generally used for National Environmental Policy Act (NEPA) analysis, to those used in Section 106 of the National Historic Preservation Act (NHPA), and to those used in Section 7 of the Endangered Species Act (ESA).

Environmental Impact Analysis

NEPA requires that environmental documents disclose the environmental impacts of the proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the proposed action be implemented. This section analyzes the environmental consequences of the special resource study alternatives on potentially affected resources. These analyses provide the basis for comparing the effects of the alternatives. NEPA requires consideration of context, intensity and duration of impacts, indirect impacts, cumulative impacts, and measures to mitigate impacts. These are defined below. Impact analysis for historic prop-

erties is based on NHPA 36 CFR Part 800 criteria of effect as also detailed below. (In this document, "effects" and "impacts" are used interchangeably.)

The environmental consequences for each impact topic were defined based on the following information regarding context, type of impact, duration of impact, area of impact and the cumulative context. As noted above, because of the broad nature of the special resource study alternatives, unless otherwise stated or demonstrated in the resource section in Environmental Consequences, analysis is also broad and is based on qualitative rather than quantitative assessment of impacts.

Context of Impact

The context of the impact is the setting within which impacts are analyzed – such as the project area or region, or for cultural resources – the area of potential effects. The context describes whether the impacts are site specific, local, regional, or wider in scope.

The project area for this special resource study is the Rim of the Valley corridor area as described in the Rim of the Valley Special Resource Study legislation (2008). This area is shown in *Figure 1-2: Study Area* in *Chapter 1: Introduction*. As shown in *Chapter 5: Alternatives*, maps for alternatives A-D include some or all of this study area.

Type of Impact

The type of impact is a measure of whether the impact will improve or harm the resource and whether that harm occurs immediately or at some later point in time. Resource impacts can be beneficial or adverse and direct or indirect.

- **Beneficial Impacts**: A beneficial impact is a positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition. Beneficial impacts reduce or improve resource conditions related to the impact being discussed.
- **Adverse Impacts**: An adverse impact is a change that moves the resource away from a desired condition or detracts from its appearance or condition. Adverse impacts increase or result in the impact being discussed. Adverse impacts cause depletion or loss of the resource being discussed.
- **Direct Impacts**: Direct impacts are caused by and occur at the same time and place as the action, such as animal and plant mortality, damage to cultural resources, etc.
- **Indirect Impacts**: Indirect impacts are caused by the action, but occur later in time, at another place, or to another resource. Examples include changes in species composition, vegetation structure, range of wildlife, offsite erosion or changes in general economic conditions tied to park activities.

Duration of Impact

Duration is a measure of the time period over which the effects of an impact persist. The duration of impacts evaluated in this environmental assessment may be one of the following:

- **Short-term**: Short-term impacts are often quickly reversible and associated with a specific event , from less than one to approximately five years.
- **Long-term**: Long-term impacts are reversible over a much longer period, or may occur continuously based on normal activity, or for more than five years.

Since full implementation of an action alternative often would take place over a number of years, duration frequently assesses the duration of individual actions of the alternative (including removal of structures, site restoration, and construction of new structures) instead of full implementation of the alternative. For a special resource study, depending on whether Congress and the President act, the alternatives may or may not be selected for implementation. Legislation may also direct implementation of an action not analyzed in this study.

Area of Impact

- **Localized**: Detectable only in the vicinity of the activity.
- **Widespread**: Detectable on a landscape or regional scale.

Impact Mitigation

Specific mitigation measures are listed following the analysis for each resource impact topic.

In general, mitigation measures:

- Avoid conducting management activities in an area of the affected resource
- Minimize the type, duration or intensity of the impact to an affected resource
- Mitigate the impact by:
  - Repairing localized damage to the affected resource immediately after an adverse impact.
  - Rehabilitating an affected resource with a combination of additional management activities.
  - Compensating a major long-term adverse direct impact through additional strategies designed to improve an affected resource to the degree practicable.

Impacts have been assessed under the assumption that proposed measures to minimize or mitigate the impact would be implemented (see Measures to Avoid, Minimize, or Mitigate Impacts section in each resource topic section).

Because impacts associated with potential implementation of the alternatives described in this special resource study are

necessarily generally described, the potential for these impacts is also described at a general level.

Intensity of Impact

The intensity describes the degree, level or strength of the impact. For this analysis, intensity is characterized as negligible, minor, moderate or major.

Because special resource study recommendations are broad, the following general intensity definitions apply to all impacts except special status species and cultural resources. As described above, special status species and cultural resources impact determinations are formally determined under the Endangered Species Act (Section 7) and the National Historic Preservation Act (Section 106), respectively.

- **Negligible**: The anticipated degree of change would not be detectable or would be only slightly detectable. Impacts are localized or at the lowest level of detection.
- **Minor**: There would be a measurable or anticipated degree of change that would have a slight effect, causing a slightly noticeable change compared to existing conditions. These impacts are often localized. Impacts would usually be noticed only by specialists or those familiar with the specific resource. Mitigation measures, if applicable, would be simple to implement and would likely be successful.
- **Moderate**: The measurable or anticipated degree of change is readily apparent and appreciable and would be noticed by most people, with a change compared to existing conditions. A moderate effect can be localized or widespread. Mitigation measures, if applicable, would be necessary to offset adverse impacts and would likely be successful.
- **Major**: The measurable or anticipated degree of change would be substantial, causing a highly noticeable change compared to existing conditions. The change would be obvious, though some people would not be able to identify what change had occurred. Major changes are often widespread, but could be localized within a large area. More extensive mitigation measures, if applicable, would be needed but their success could not be guaranteed or they would minimize the effect in only a small area.

Special Status Species (definitions follow section 7 of the ESA)

- **No Effect:** The project (or action) is located outside suitable habitat and there would be no disturbance or other direct or indirect impacts on the species. The action will not affect the listed species or its designated critical habitat (USFWS 1998).
- **May Effect, Not Likely to Adversely Affect**: The project (or action) occurs in suitable habitat or results in indirect impacts on the species, but the effect on the species is likely to be entirely beneficial, discountable, or insignificant. The action may pose effects on listed species or designated critical habitat but given circumstances or mitigation conditions, the effects may be discounted, insignificant, or completely beneficial. Insignificant effects would not result in take. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur (USFWS 1998).
- **May Effect, Likely to Adversely Affect**: The project (or action) would have an adverse effect on a listed species as a result of direct, indirect, interrelated, or interdependent actions. An adverse effect on a listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions and the effect is not: discountable, insignificant, or beneficial (USFWS 1998).

Cultural Resources Impacts (definitions follow Section 106 of the NHPA)

- **No Effect**: The action will not affect historic properties nor will it affect the characteristics that may qualify historic properties for inclusion in the National Register of Historic Places. The actions, based on conditions of approval, would also be unlikely to result in impacts to presently unidentified cultural resources.
- **No Adverse Effect**: An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the national register. For example, the action may result in diminishing the character-defining features or aspects of a historic structure that make it eligible for the national register, but the actions are consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.
- **Adverse Effect**: An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association. In other words, the effects on character-defining features or aspects of a historic structure would result in diminishing or removing the characteristics that make it eligible for the National Register of Historic Places and as a result would not be consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

Cumulative Impacts

The Council on Environmental Quality (CEQ) describes a cumulative impact as follows (Regulation 1508.7):

A "cumulative impact" is the impact on the environment which results from the incremental impact of the action when

added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The projects addressed in this cumulative impacts analysis include past and present actions, as well as any planning or development activity currently being implemented or planned for implementation in the reasonably foreseeable future. Cumulative actions are evaluated in conjunction with the impacts of an alternative to determine if they have any additive effects on a particular resource.

The geographic scope for this analysis includes actions within and near the study area boundary, while the temporal scope includes projects within a range of approximately ten years. Because most of the future projects included in the cumulative effects analysis scenario area in the early planning stages, the evaluation of cumulative impacts was based on a general description of the project. The following projects were among those identified for the purpose of conducting the cumulative effects analysis (see also the list in *Chapter 1: Introduction*, Related Plans and Studies)

Past

- Construction of the Anthony C. Beilenson Visitor Center at King Gillette Ranch
- Santa Monica Mountains Land Protection Plan

Present

- Management of SMMNRA by the National Park Service, California State Parks, Santa Monica Mountains Conservancy (SMMC) and others
- Ongoing management by a variety of other public and private land managers in the study area
- Ongoing studies and actions by NASA, Boeing and others related to contamination at the Santa Susana Field Laboratory (including Proposed NASA Demolition and Environmental Clean-up Activities for the Santa Susana Field Laboratory Final Environmental Impact Statement March 2014)
- Current actions by conservation organizations, such as the SMMC, to protect lands within the study area

Future

- Santa Monica Mountains trails management plan (initiated 2014)
- Santa Monica Mountains invasive plant management plan
- Proposed actions by conservation organizations, such as the SMMC, to protect lands within the study area
- Proposed actions along the Los Angeles River by multiple agencies to improve ecological habitat and recreation opportunities.

Impact Topics Analyzed

Specific impact topics were developed to address potential natural, cultural, recreational and park operations impacts that might result from the proposed alternatives as identified by the public, NPS, and other agencies, and to address federal laws, regulations and orders, and NPS policy. A brief rationale for the selection of each impact topic is given below. These impact topics focus the discussion on comparing the environmental impacts among alternatives on affected resources.

Physical Resources

Land Use

NPS *Management Policies 2006* provides direction for protection of lands and resources within park units, acquisition of nonfederal lands that are within park units, and cooperation with agencies, tribes, and private property owners to provide appropriate protection measures. Land use refers to the general characteristics of how land is allocated among various administrative, preservation, recreational, and development needs. Because land use could change as a result of the implementation of the action alternatives, it is included as an impact topic. This section also considers prime and unique farmlands and urban quality.

Prime and Unique Farmlands

The Farmland Protection Policy Act was implemented to preserve and protect the dwindling supply of farmland in the nation. In 1980, the CEQ directed that federal agencies assess the effects of their actions on farmlands classified by the U.S. Department of Agriculture Natural Resources Conservation Service as prime or unique. The U.S. Department of Agriculture defines these lands as having soils that are best suited for producing food, feed, forage, and fiber or oilseed crops. Use of land for farming and the type of farmland soils are considered in determining prime and unique farmland. Prime and unique farmlands are included within the study area.

Urban quality, historic and cultural resources, and design of the built environment

Quality of open spaces is a key adjunct to urban quality and quality of life issues. Improving this for residents of the Los Angeles metropolitan area is one of the purposes of this special resources study.

Paleontological Resources

According to NPS *Management Policies 2006*, paleontological resources (fossils), including both organic and mineralized remains in body or trace form, will be protected, preserved, and managed for public education, interpretation, and scientific re-

search. The study area contains a wide array of paleontological resources. SMMNRA includes one of the most extensive and diverse assemblages of fossil material known in the national park system.

Water Resources

Water Quality and Quantity

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act (CWA) (33 USC 1251 et seq., PL 92-500 and PL 95-217), is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters, to enhance the quality of water resources (including hydrology, water quality and water quantity), and to prevent, control, and abate water pollution. NPS *Management Policies 2006* provides direction for the preservation, use, and quality of water in national parks.

Biological Resources

Vegetation

NEPA calls for examination of the impacts on the components of affected ecosystems. NPS *Management Policies 2006* calls for protecting the natural abundance and diversity of park native species and communities, including avoiding, minimizing, or mitigating potential impacts from proposed projects. If implemented, the action alternatives could affect the protection of key vegetation communities.

Wildlife

NEPA calls for examination of the impacts on the components of affected ecosystems. NPS policy is to protect the natural abundance and diversity of park native species and communities, including avoiding, minimizing, or mitigating potential impacts from proposed projects. If implemented, the action alternatives could affect the protection of wildlife that reside in or near the study area.

Special Status Species

The federal ESA requires an examination of impacts to all federally listed threatened or endangered species. The NPS *Management Policies 2006* calls for an analysis of impacts to state-listed threatened or endangered species and federal candidate species. Under the ESA, the NPS is mandated to promote the conservation of all federally listed threatened and endangered species and their critical habitats. NPS policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species. Ongoing informal consultation with the USFWS has identified several important rare, threatened, and endangered species that occur in or near the study area.

Cultural Resources

Prehistoric and Historic Archeological Resources

In addition to the National Historic Preservation Act and NPS *Management Policies 2006*, NPS Director's Order-28B Archeology affirms a long-term commitment to the appropriate investigation, documentation, preservation, interpretation, and protection of archeological resources inside units of the national park system. As one of the principal stewards of America's heritage, the NPS is charged with the preservation of the commemorative, educational, scientific, and traditional cultural values of archeological resources for the benefit and enjoyment of present and future generations. Archeological resources are nonrenewable and irreplaceable, so it is important that all management decisions and activities throughout the national park system reflect a commitment to the conservation of archeological resources as elements of the nation's heritage.

Traditional Cultural (Ethnographic) Resources

NPS *Management Policies 2006* and the NPS Cultural Resource Management Guideline (Director's Order 28 and handbook) direct parks to consider potential impacts of planned actions on cultural resources, including ethnographic resources.

Historic Structures / Cultural Landscapes

Consideration of the impacts to historic properties is required under provisions of Section 106 of the NHPA (1966), as amended, and the 2008 NPS Programmatic Agreement among the National Park Service, the National Conference of State Historic Preservation Officers, and the Advisory Council on Historic Preservation. It is also required under the NPS *Management Policies 2006*. Federal land managing agencies are required to consider the effects proposed actions may have on properties listed in, or eligible for inclusion in, the National Register of Historic Places (i.e. Historic Properties), and to allow the Advisory Council a reasonable opportunity to comment. Agencies are required to consult with federal, state, local, and tribal government/organizations, identify historic properties, assess adverse effects to historic properties, and negate, minimize, or mitigate adverse effects to historic properties while engaged in any federal or federally assisted undertaking (36 CFR Part 800). A wide variety of sites both listed on and eligible for the national register are found within the study area, therefore, historic structures and cultural landscapes is included in this analysis.

According to NPS Director's Order-28 Cultural Resource Management Guideline, a cultural landscape is a reflection of human adaptation and use of natural resources, and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. Although a cultural landscape inventory has not been conducted it is likely that there are potentially eligible resources within the study area.

Recreational / Social Resources

Visitor Experience

Providing for the enjoyment of national park resources is one of the foundations of the NPS Organic Act. The Organic Act directs the NPS to promote and regulate the use of national parks to conserve resources and to provide for their enjoyment by existing and future generations. In accordance with this act, NPS *Management Policies 2006* and Director's Order 17 (Tourism) identify visitor use patterns and the desired visitor carrying capacity, and allow for appropriate recreational activities within park units. The impacts considered in this section related to visitor experience, include access and transportation, visitor use opportunities, and interpretation and education.

Park Operations and Partnerships

Impacts to park operations and partnerships are often considered in environmental documents to disclose the degree to which proposed actions would change park management strategies and methods and what additional costs (including staffing) are associated with the proposal. Because the alternatives include actions that could affect a unit of the national park system (SMMNRA), this topic has been included.

Socioeconomics

Socioeconomic impact analysis is required, as appropriate, under NEPA and NPS *Management Policies 2006* pertaining to gateway communities. A portion of the regional economy is based on tourism and resource use. Agriculture, manufacturing, professional services, and education also contribute to regional economies.

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations (59 FR 7629, as amended by Executive Order 12948, 60 FR 6381, 42 USC 4321), requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse levels of human health or environmental effects from their programs and policies on minorities and low-income populations and communities. A portion of the purpose of this special resource study is related to providing close-to-home recreational opportunities for urban residents living in areas that currently do not meet standards for access to parks and recreation areas.

Impact Topics Dismissed From Further Analysis

The topics listed below either would not be affected by, or there would be negligible to minor effects from the action alternatives. These effects would not be detectable or would be only slightly detectable over existing conditions. Therefore, these topics have been dismissed from further analysis. A detailed rationale for dismissing these and other impact topics is given below.

Physical Resources

Air Quality

The Clean Air Act of 1963 as amended (42 USC 7401 et seq., PL 88-206) was established to promote the public health and welfare by protecting and enhancing the Nation's air quality. The act establishes specific programs that provide special protection for air resources and air quality-related values associated with NPS units. SMMNRA is a class II area under the CAA. Class II areas allow only moderate increases in certain air pollutants, while class I areas (primarily large national parks and wilderness areas) are afforded the highest degree of protection, meaning that very little additional deterioration of air quality is permitted. The Act states that park managers have an affirmative responsibility to protect air quality-related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse air pollution impacts. There are no specific actions called for in this study that would affect air quality.

Lightscapes

NPS *Management Policies 2006* states that "the Service will preserve, to the greatest extent possible, the natural lightscapes of parks, which are natural resources and values that exist in the absence of human-caused light." The stars, planets, and moon, visible during clear nights, influence people and many other species, such as birds, terrestrial predators and prey. The study area alternatives would not introduce or increase artificial light sources in the environment. Whether study area alternatives would decrease or limit additional light sources would depend on which lands were protected in the study area. Overall impacts would likely be negligible unless additional very large areas were protected.

Soundscapes

Park soundscape resources encompass all the natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationship among natural sounds of different frequencies and volumes in the park. NPS Director's Order 47 (Sound Preservation and Noise Management) defines operational policies that will protect, maintain, or restore the natural soundscape. Natural sounds are part of the park environment and are vital to the functioning of ecosystems and may also be valuable indicators of their health. As the total ambient acoustic environment associated with an area, soundscapes may be composed of both natural and human-made sounds. In a high noise environment, natural ambient sounds may be masked by other noise sources. The study area alternatives would not introduce or increase sound sources in the environment. Whether study area alternatives would limit additional noise would be dependent on which lands were protected.

Geology

Geology is an important part of the significance of the Santa Monica Mountains. It contains evidence of the rotation of the Transverse Ranges. These east-west trending mountains rotated approximately 90 degrees during the Miocene epoch (12-20 million years ago) when they were stuck under the North American Plate and pushed clockwise by the Pacific Plate. Although the alternatives would include various areas of geological significance within identified boundaries, there would be no discernible effects on geologic resources.

Soils

NPS *Management Policies 2006* require the NPS to understand and preserve and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil. There are no specific implementation measures in the alternatives that would affect soils.

Water Resources (Wetlands and Floodplains)

Wetlands

Section 404 of the Clean Water Act requires federal agencies to avoid, minimize and mitigate impacts to wetlands. Executive Order 11990, NPS *Management Policies 2006*, and Director's Order 77-1: Wetland Protection direct that wetlands be protected and that wetlands and wetland functions and values be preserved. They further direct that direct or indirect impacts to wetlands be avoided whenever there are practicable alternatives. No specific actions in the study area are proposed that would affect wetlands.

Floodplains

Executive Order 11988 (Floodplain Management) requires an examination of impacts to floodplains and potential risk involved in placing facilities within floodplains. NPS *Management Policies 2006*, Director's Order 12 (Conservation Planning, Environmental Impact Analysis, and Decision Making), and Director's Order 77-2 (Floodplain Management Guideline) provide guidelines for proposals that occur in floodplains. Executive Order 11988 requires that impacts to floodplains be addressed. No specific actions in the study area that would affect floodplains are proposed.

Cultural Resources

Native American Indian Sacred Sites

To comply with the American Indian Religious Freedom Act, federal agencies must consider the effects of their actions on American Indian traditional religious practices. Based on analysis, there are no known traditional or religious use areas within the study area. In addition, there are no known Indian sacred sites that would require compliance with Executive Order 13007: Indian Sacred Sites (61 FR 26771, 42 USC 1996).

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by the Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. There are no Indian trust resources in the study area. The lands comprising the study area are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Because there are no Indian trust resources, this topic is dismissed from further analysis in this document.

Recreational/ Social Resources

Wilderness

NPS wilderness management policies are based on provisions of the 1916 NPS Organic Act, the Wilderness Act (1964), and legislation establishing individual units of the national park system. These policies establish consistent NPS-wide direction for the preservation, management, and use of wilderness. The Magic Mountain Wilderness (12,000 acres, part of the San Gabriel Mountains National Monument) would not be affected by the proposals in this plan.

Wild and Scenic Rivers

Under the Wild and Scenic Rivers Act (16 USC 1271 - 1287), "certain selected rivers of the Nation, which with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations." There are no wild and scenic rivers in the study area.

Energy Consumption

Implementation of the proposed actions would not cause measurable increases in the overall consumption of electricity, propane, wood, fuel oil, gas, or diesel associated with visitation or for park operations and maintenance.

Land Use Affected Environment

Land Ownership and Regulatory Setting

There is a complex mixture of land ownership and use in the study area, which is located in Ventura and Los Angeles counties (*Figure 3-3: Land Use* in *Chapter 3: New National Park Unit Criteria Analysis*). The study area includes federal, state, county, city and private lands as well as privately managed pub-

Table 6-1: Study Area Cities and Unincorporated Communities

Los Angeles County Cities and Towns
Agoura Hills
Beverly Hills
Burbank
Calabasas
Glendale
Hidden Hills
La Cañada Flintridge
Los Angeles
Malibu
Pacific Palisades
Pasadena
Santa Clarita - incl. Newhall
Santa Monica
Sierra Madre
South Pasadena
Westlake Village
Los Angeles County Unincorporated Communities
Acton
Agoura
Altadena
Bell Canyon
La Crescenta-Montrose
City of Los Angeles Communities
Bel Air
Brentwood
Canoga Park
Chatsworth
Encino
Northridge
Panorama City
Reseda
Sherman Oaks
Studio City
Sylmar
Tarzana
Tujunga
Universal City
West Hills
Winnetka
Woodland Hills
Ventura County Cities, Towns and Communities
Camarillo
Moorpark
Newbury Park
Oak Park
Simi Valley
Thousand Oaks

lic lands. The cities and unincorporated communities partially (most) or wholly included in the study area are listed in *Table 6-1: Study Area Cities and Unincorporated Communities*.

Each county and city within and surrounding SMMNRA has established land use plans to guide future development within their jurisdictions. Unincorporated community plans are part of county general plans. In Ventura and Los Angeles counties, areas adjacent to and within SMMNRA are often designated open space or rural residential, however there is also very dense urban development adjacent to the boundary. Commercial and industrial development is generally limited to corridors along the north side of U.S. Highway 101 as well as along the Los Angeles River and Arroyo Seco corridors. Commercial development is also interspersed throughout the study in cities and towns. Land use varies from high density residential development to parcels of 40 acres or more. In addition to county general plans for undeveloped areas, areas close to the coast are subject to local coastal plans.

Lands within the study area boundary are used for a wide variety of purposes, including as public and private open space (lands protected by private landowners that may or may not be open to public use, such as the Bridle Path Homeowners Association lands in Simi Valley), rural, suburban and urban residential, commercial and industrial activities (*Figure 3-3: Land Use*). Several major highways are found within the study area boundary. Among these include U.S. Highway 101, U.S. Interstates 5, 10, 110, 210, and 405 and California State Routes 1, 2, 23, 27, 118, 126, 134, and 170.

Lands within the study area range from highly urbanized areas in downtown Los Angeles to undeveloped open space. Despite the urbanization within and surrounding the study area, the majority of land within it is undeveloped. Many areas, however, have been affected by land uses such as grazing, water, natural gas and oil development; aggregate mining, and fire access roads and contain small to large areas of highly altered habitat surrounded by large areas of relatively undisturbed habitat. In other areas, because public use of some areas has been restricted by fencing, such as near the Chatsworth Reservoir and the Santa Susana Field Laboratory, and because development within these areas is concentrated, there are also some relatively pristine areas.

A fairly large portion of lands within the study area (approximately 50%) are open to public use and are managed for open space and recreation qualities. There are also large areas, such as the Santa Susana Mountains, that are primarily private and are used for grazing and utility infrastructure, but which currently have minimal development.

Regulatory authority for lands within the study area boundary varies. Regulatory authority for land use is guided by county and/or city land use planning and local zoning for areas within these boundaries and/or state and federal land use planning where state or federal land ownership is present.

NPS Regulatory Authorities

As described in the social and economic impacts section of *Chapters 3* and *4*, additional NPS regulations that could pertain to activities on lands considered for addition to SMMNRA in alternatives C and D include regulation of mineral extraction and the exercise of nonfederal oil and gas rights. These regulations are designed to insure that activities undertaken pursuant to these rights are conducted in a manner consistent with the purposes for which the national park system and each unit thereof were created. New or existing solid waste disposal sites would continue be regulated under 36 CFR Chapter 1, Part 6. These regulations prohibit the operation of any solid

waste disposal site, except as specifically provided for, and govern the continued use of any existing solid waste disposal site within the boundary of any unit of the national park system.

For mineral extraction, the type of mineral right determines which regulations would be applicable. Mining claims are subject to the General Mining Law of 1872 as well as other laws. Mining claims may be established on federally owned public domain lands only if those lands are open to such claims. Many areas of federally owned public domain land, including park units, are withdrawn from the establishment of new mining claims. If the expansion area were to contain previously-established "valid" (meaning the claims have met certain legal, technical, and economic thresholds) mining claims, operations on these claims would come under 36 CFR, Part 9, Subpart 9A, "Mining and Mining Claims," which – like valid mining claims on other lands – require approval of a plan of operations to ensure that operations associated with the development of the mining claim would not adversely impact natural and cultural park resources and values. Within the study area, active mining primarily takes place on U.S. Forest Service and Bureau of Land Management lands in the San Gabriel Mountains and in areas of the Soledad Basin. U.S Forest Service managed lands are not under consideration for a new park unit or boundary adjustment to SMMNRA.

For other types of mineral operations in any expansion areas, such as extraction of sand and gravel, the general NPS regulations at 36 CFR Parts 1 and 5 would apply based on the federal or nonfederal ownership of the mineral interest. These particular regulations apply to federally owned lands within park units (see 36 CFR § 1.2(a) (1)), and also to the nonfederally owned areas listed at 36 CFR § 1.2(a) (2)-(5). Mineral operations for these types of mineral interests would be conducted under NPS special use permits when appropriate.

Regulations located at 36 CFR Part 9, Subpart B, govern the exercise of nonfederal oil and gas rights within NPS units. "Nonfederal oil and gas rights" are either owned by a state or a private entity. Existing rights either pre-date the establishment of the park or have not been acquired by the United States. These regulations are designed to ensure that activities undertaken pursuant to these rights are conducted in a manner consistent with the purposes for which the National Park System and each unit thereof were created. These regulations would primarily apply if NPS were to purchase lands where oil and gas rights are retained by another entity. Oil and gas development is prevalent in portions of the Santa Susana Mountains and Simi Hills.

Public Lands/Protected Areas

Management of the lands within the study area boundary is overseen by a variety of federal, state, other public and private landowners. Parklands (areas set aside as public open space) characterize almost 50% of the study area. These include lands owned and managed by the NPS (approximately 23,350 acres), the State of California (California State Parks)(approximately 36,000 acres in SMMNRA plus 1,300 additional acres in the study area), and Santa Monica Mountains Conservancy (approximately 37,300 acres), the U.S. Forest Service (180,000 acres) and the Mountains Recreation and Conservation Authority (approximately 40,000 acres) (California Protected Areas Database, Version 1.9).

There are 11 California State Parks (including State Beaches) within the study area. Among the largest of these (Point Mugu, Leo Carrillo, Point Dume, Malibu Creek, Malibu Lagoon, Topanga, and Will Rogers) are within SMMNRA. Others include Los Encinos State Historic Park, Santa Susana Pass State Historic Park, Rio de Los Angeles State Park, El Pueblo de Los Angeles State Historical Monument, and Los Angeles State Historic Park. The Santa Monica Mountains Conservancy (SMMC) is a state agency created in 1979 with authority to purchase land and to review land use planning for consistency with the *Santa Monica Mountains Comprehensive Plan*. Beginning in 1983, state legislation authorized the Santa Monica Mountains Conservancy to purchase lands within the Rim of the Valley Corridor. The Mountains Recreation and Conservation Authority (MRCA), a local government public agency established in 1985 pursuant to the Joint Powers Act, is a land management entity for its member agencies. The MRCA is a local partnership between the Santa Monica Mountains Conservancy, which is a state agency established by the California legislature, and the Conejo Recreation and Park District and the Rancho Simi Recreation and Park District, both of which are local park agencies established by people in communities encompassed by them (primarily Thousand Oaks, Westlake, Oak Park and Simi Valley).

Other federal lands include those managed by the Army Corps of Engineers (USACOE) (approximately 90 acres) primarily in the Sepulveda basin and Hansen Dam areas (co-managed with Los Angeles City Department of Recreation and Parks); the Bureau of Land Management (BLM) with approximately 3,000 acres primarily spread out in the Santa Clara River area; and the National Aeronautics and Space Administration (NASA) with approximately 451 acres for the Santa Susana Field Laboratory, and 157 acres for the Jet Propulsion Laboratory, which is a federally funded research and development facility managed by the California Institute of Technology for NASA.

Among the other public lands include 4,500 acres managed by Ventura County, 4,600 acres managed by Los Angeles County, and approximately another 7,600 acres of lands managed by Conejo Open Space Conservation Agency, with 2,900 acres managed by Rancho Simi Recreation and Park District. An additional 28,500 acres are owned/managed by cities and towns as public open space.

Urban Land Uses

Rapid urbanization occurred in Los Angeles County beginning in 1920, with a population increase of 240% between 1940 and 2012 (Stoms et al. 2012). Population growth also occurred in eastern Ventura County beginning in the 1970s and in western Ventura County beginning in the 1980s. In 2010, according to the Farmland Mapping and Monitoring Program (FMMP) map, Ventura County contained 105,233 acres of built up and developed land (0.089% of the 1,843.3 square miles in the county), while Los Angeles County contained 174,288 acres of built up and developed land (.000067% of the 4,057.88 square miles in the county). Between 2000 and 2010, the population of Los Angeles County, already the most populous county in the state, grew from 9.543 million to 9.827 million or 0.97%. During the same period the population of Ventura County grew from 756,366 to 825,445 or 0.91% (U.S. Census Bureau 2010).

Farmlands and Agriculture, including Prime and Unique Farmlands

A portion of the study area is also bordered by lands devoted to farming and agriculture. Over 100,000 acres are categorized as important farmland by the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP). Irrigated agricultural lands are primarily located near Camarillo and Thousand Oaks. These lands are primarily used for growing strawberries and vegetables. In the Simi Hills and Santa Susana Mountains there are substantial grazing lands. In the Santa Monica Mountains vineyards are becoming more prevalent.

Prime farmland is land with the best combination of physical and chemical features able to sustain long-term production of agricultural crops. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Unique farmland is of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but many include non-irrigated orchards or vineyards as found in some climatic zones in California.

The loss of high quality farmland to development has received national attention. Threats to farmland primarily occur on the edge of metropolitan areas where the value of lands for residential and other urban uses exceeds their value as farmland. Most lands in the central and eastern part of the study area were long-ago converted from farmland to other uses. The once widespread walnut and orange groves in the San Fernando and Simi valleys now exist primarily as remnants in suburban backyards. Adjacent to the western and northern part of the study area, this conversion is ongoing in the communities of Camarillo and Moorpark as well as farther west and north in Oxnard, Santa Paula and Fillmore.

The California Department of Conservation (CDC) Farmland Mapping and Monitoring Program (FMMP) program database indicates that there are approximately 8,500 acres of prime and unique farmland in the study area (FMMP 2010). Most of this is located in Ventura County near the communities of Moorpark, Camarillo, and Point Hueneme. Smaller areas of prime and unique farmland are located within SMMNRA near the communities of Thousand Oaks and Newbury Park, in the central Santa Monica Mountains along Las Virgenes Road and Mulholland Drive, and along the Upper Santa Clara River in Soledad basin.

State-wide, farmland conversion data collected over the past 24 years indicates that for every five acres of land leaving agricultural use, four convert to urban land and one converts to other land uses. Within the study area, over 300 acres of prime and unique farmland were converted to other uses, primarily urban development between 2000 and 2010. Important farmland acreage (prime and unique farmland, farmland of local and statewide importance, and land suitable for grazing) decreased by 3,000 acres from approximately 104,000 acres in 2000 to 101,000 acres in 2010. Prime farmland decreased by 1,100 acres, whereas unique farmland increased by almost 300 acres (FMMP 2000, FMMP 2010).

Some of the farmland in the study area (16,600 acres) is protected voluntarily under the California Land Conservation Act of 1965 (Williamson Act) (The Williamson Act, Ventura County California Land Conservation Act Program). Through this program landowners enter into voluntary contracts with the county to maintain land in agricultural use for a period of 10 or 20 years. In exchange for the restriction in land use, landowners receive a reduction in property taxes. Although formerly very successful, in recent years, the Williamson Act has been less successful because of statewide economic conditions, resulting in declining incentives. When the value of land for development outweighs the benefit derived from the Williamson Act, landowners have less incentive to stay in the program. Lands within the study area are now closer to urban development. In 2004, there were approximately 162 acres of prime farmland in the application process for non-renewal, which means these lands would no longer be under contract and could convert to other uses in 2014. These lands are primarily located near Thousand Oaks and Camarillo (FMMP 2008).

Open Space

Where lands have been protected as open space and/or used for rural or low intensity ranching, these areas often remain dominated by native plant communities. In the study area, these plant communities include chaparral, big-cone Douglas-fir forest, walnut woodlands, oak woodland, coastal sage scrub, alluvial fan sage scrub, riparian woodlands, intermittent and perennial stream habitats and others. Where lands have been heavily grazed or affected by development, including land clearing activities and agriculture, native landscapes are degraded or absent. Nonetheless, much of the unprotected open space in the study area is comprised of primarily native vegetation communities. These areas are primarily located in the hills and mountains surrounding the valleys in the area.

Table 6-2: Approximate Acreage of Study Area Parks and Protected Open Space

Parks and Protected Open Space	Approximate acreage within study area	% of study area
Local and Community parks (cities and towns)	28,500	4.38%
County Parks	9,100	1.40%
State Land Conservancies	9,100	1%
California State Parks	37,300	5.74%
Special Park Districts and Joint Powers Authorities	47,300	7.28%
Bureau of Land Management	3,000	>1%
U.S. Forest Service	180,000	20.28%
National Park Service	23,350	3.59%
Private protected open space	1,700	>1%
Total Parks and Protected Open Space	340,000	52%

Source: California Protected Lands Database, v. 1.9

Many communities initially had or currently have prohibitions on hillside development and/or have focused infrastructure in valley bottoms. This pattern of development has resulted in the retention of large open spaces in the hills and mountains that make up the Rim of the Valley Corridor. For instance, although the San Fernando and Simi valleys are blanketed by housing and shopping centers the hills surrounding these areas (Simi Hills, Santa Susana Mountains, Santa Monica Mountains, and Verdugo Hills) are largely natural areas. Thousand Oaks also has many small hills within developed areas and is bordered by the Santa Monica and Conejo mountains and the Las Posas and Simi hills. Along the Arroyo Seco corridor, pockets of natural areas remain in the San Rafael Hills as well as in the hills of northeastern Los Angeles.

These large undeveloped areas surrounding the cities and towns in the study area still function as native wildlife habitat and currently provide outstanding opportunities to link currently protected and unprotected areas for wildlife and to provide current and additional recreational opportunities.

There are also highly degraded or developed areas where native land cover is completely absent, but even among these, there are some current efforts directed toward restoration. Among the most promising of these efforts is the transformation of the Los Angeles River into a greenway corridor that supports multiple objectives, including habitat enhancement, stormwater management, recreation and economic revitalization. The 51-mile Los Angeles River, which passes through 13 cities and numerous communities, has been the focus of many agencies, community groups, nonprofit organizations and the business community. Among these efforts has been the *Los Angeles River Revitalization Master Plan*, prepared by the City of Los Angeles. This plan has many proposals for projects throughout Los Angeles that will be developed by working cooperatively with local residents and other stakeholders. The City is working closely with the U.S. Army Corps of Engineers and the County of Los Angeles, key project partners, to realize the new vision through the *Los Angeles River Ecosystem Restoration Feasibility Study*, which has identified environmental restoration opportunities. These efforts are connecting dense urban communities with close-to-home natural resources and recreational opportunities.

Building on the Los Angeles River Greenway concept, similar work is underway to transform tributaries of the Los Angeles River, such as Tujunga Wash and the Arroyo Seco, into greenways that will contribute towards a regional greenway network.

In addition to the Santa Monica Mountains Conservancy and Mountains Recreation and Conservation Authority, there are at least another 50 state, local or private public land organizations actively working to create public lands within the study area. Among these include: Trust for Public Land, The Nature Conservancy, Mountains Restoration Trust, Arroyos and Foothills Conservancy, Sierra Madre Mountain Conservancy, Los Angeles Neighborhood Land Trust, and others (*Table 6-2: Approximate Acreage of Study Area Parks and Protected Open Space*).

Land Use Described by Geographic Areas

The study area can be understood within a physiographic context, by a closer look at the following ten areas: Santa Monica Mountains, Conejo Mountain - Las Posas Hills, Simi Hills, Santa Susana Mountains, Upper Santa Clara River, San Gabriel Mountains, San Gabriel Foothills, Verdugo Mountains - San Rafael Hills, Arroyo Seco, and the Los Angeles River.

Santa Monica Mountains

Although much of this area is comprised of open space, there are also pockets of suburban and urban development within it. A large portion of the eastern Santa Monica Mountains is very urban. Exceptions to this highly urbanized landscape include Griffith Park and Franklin Canyon as well as the pockets of open space formed by the SMMC cross-mountain parks (Runyon Canyon, Dirt Mulholland and others). A little over half of the land in SMMNRA is in public ownership (divided among park agencies, as well as cities [Calabasas, Malibu, Los Angeles, Thousand Oaks] and other entities, such as the Las Virgenes Municipal Water District, University of California, and other Los Angeles County lands), with private lands comprising the rest. Approximately 50% of this area is conserved as protected open space, another 40% of the area is open space in private ownership and approximately 10% of the Santa Monica Mountains are developed (with urban, suburban, commercial or industrial uses) (Stoms et al. 2012). With some small exceptions,

including recently established vineyards and orchards, agricultural land uses are not prevalent in SMMNRA.

Conejo Mountain - Las Posas Hills

This area includes lands on the western edge of the Santa Monica Mountains, as well as lands north and west of Thousand Oaks. Although there is some contiguous open space, public lands in this area are primarily associated with development easements. This subgeographic area also contains the largest percentage of lands in agricultural use.

Simi Hills

The portion of the Simi Hills included in SMMNRA was expanded through a boundary adjustment in 2002. Although surrounded by development, this area comprises a large block protected as public land. This area also contains a landfill as well as a large area of private open space (Bridle Path Open Space).

Santa Susana Mountains

The Santa Susana Mountains are primarily undeveloped open space. Public land is located primarily in the eastern part of the mountains where they abut the Simi Hills as well as along the edge of the Santa Clarita area. Although mostly undeveloped, there are development proposals pending for some areas, including for Mormon/Brown's Canyon. Although many older oil wells have been abandoned, oil extraction continues in some areas of the Santa Susana Mountains. Additionally, the Southern California Gas Company's 3,600-acre Aliso Canyon storage facility is located in the Santa Susana Mountains north of Porter Ranch and Northridge. The facility stores natural gas in depleted underground oil fields. This facility services 20.9 million customers and as such is part of the region's natural gas critical infrastructure.

Upper Santa Clara River

This area primarily comprises the northern foothills of the San Gabriel Mountains (Angeles National Forest and San Gabriel Mountains National Monument) up to and including the Santa Clara River. With the exception of non-contiguous public lands managed/owned by the Bureau of Land Management, California State Parks and local jurisdictions, much of this area is privately owned. There is a mix of uses in this area, including residential, recreational, gravel mining and other commercial and industrial uses.

San Gabriel Foothills

Although edged by urban development, to the south and the Angeles National Forest and San Gabriel Mountains National Monument to the north, the generally undeveloped San Gabriel foothills contain a mosaic of land uses, including protected open space, residential, institutional and commercial development.

San Gabriel Mountains

The San Gabriel Mountains region of the study area is managed by the U.S. Forest Service as part of the Angeles National Forest and San Gabriel Mountains National Monument. Although the primary use is recreation, the U.S. Forest Service managed areas also contain utility easements, communications facilities, and infrastructure related to flood protection and water supply. The San Gabriel Mountains comprise approximately 70% of the open space in Los Angeles County.

Verdugo Mountains - San Rafael Hills

This area is described as a primarily undeveloped island in the midst of a highly developed urban landscape. There is a variety of public parklands that span the center portion of the Verdugo Mountains, with residential areas located mostly along the foothills. There are also areas of sparse residential and commercial development. The Verdugo Mountains and San Rafael Hills are divided by a freeway that parallels Verdugo Wash. There are also several other roads. Private homes are scattered throughout the San Rafael Hills. In addition, there is the Scholl Canyon Landfill.

Arroyo Seco

The Arroyo Seco canyon extends from the San Gabriel Mountains to the Los Angeles River in downtown Los Angeles. Land use in this area is primarily comprised of public parklands surrounded by a highly urban environment. The hillsides lining the Arroyo Seco include a mixture of largely residential development interspersed with canyon and hillside open spaces and parks.

Los Angeles River

The area surrounding the Los Angeles River, including much of the river itself is highly urbanized but contains several pocket parks. Most are less than one acre. Adjacent to and near the river are Griffith and Elysian parks, large public lands managed by the City of Los Angeles. From Griffith Park to downtown Los Angeles, there is a 11-mile natural bottom section of the river within the study area boundary. In addition, Sepulveda basin, managed by the U.S. Army Corps of Engineers in partnership with the City of Los Angeles, contains a natural bottom section of the river. There are also commercial and industrial uses along the Los Angeles River. Rio de Los Angeles State Park and Los Angeles State Historic Park are also along the Los Angeles River.

Land Use Environmental Consequences

This section analyzes several aspects of land use, including potential effects on land use plans, policies or controls; potential effects on private lands; potential effects on prime and unique farmlands; and the quality of urban open space and potential effects on these qualities.

Impacts from Alternative A

There would continue to be no effect on land use associated with private lands in the study area. With designation of

SMMNRA, no additional regulatory or land use authorities over existing agencies or local governments were applied. One exception, as described in the feasibility analysis in *Chapter 3: New National Park Unit Criteria Analysis*, is the regulation of solid waste facilities, required by 36 CFR, Chapter 1, Part 6. Each partner and jurisdiction continues to retain land ownership, management, and decision-making authority for lands that they own. NPS land management policies and regulations would continue to only apply to lands owned by the NPS. Privately held lands would continue to be regulated by local land use authorities (cities and counties).

There would continue to be long-term beneficial effects from the nearly 340,000 acres of parks and open space protected in the Rim of the Valley Corridor study area by the NPS, SMMC/MRCA, other federal and state, and public and private organizations. Ongoing beneficial effects from future land protection efforts by the NPS and other federal, state and local agencies in SMMNRA would also continue. Local agencies that control land use decisions within SMMNRA would likely continue to use NPS research findings to inform land use planning and open space acquisitions, a long-term beneficial effect on conservation of land within the study area (NPS 2013f).

Efforts to protect public lands in SMMNRA (NPS and partners) and within the Rim of the Valley Corridor (SMMC and cities) would likely continue at current levels. There would be ongoing adverse effects from regional growth and development that would continue to affect unprotected lands. Sometimes these would be targeted by conservation groups for open space. Urban development within the mountains would continue to climb up canyons, expand in pockets of low lying land, ridgetops, and encroach on habitat adjacent to protected public land, removing and fragmenting habitat available to wildlife (Stoms et al. 2012). Depending on local and regional planning there could be additional adverse effects from poor or no coordination among the public and private non-profit organizations working toward land protection. Where land use planning did not take into consideration preservation of targeted lands as open space, the ability of conservation organizations to preserve open space could be reduced. Because, however, conservation organizations and/or other groups often work together to protect targeted lands, there could be ongoing beneficial effects, even in the absence of land use plans that identify areas as open space, such as occurred for Ahmanson Ranch in the Simi Hills, when conservation groups worked together to advocate protection for this area.

The signatories to the Santa Monica Mountains Cooperative Management Agreement (NPS, California State Parks and SMMC) would continue to have direct management authority for a large percentage of the protected public lands within SMMNRA and would continue to manage these lands according to federal and/or state laws and policies. Where possible, it is also likely that these agencies would continue to cooperate on issues related to the Rim of the Valley Corridor, especially where these relate to wildlife habitat connectivity and to educational programs and opportunities.

The NPS would continue to be a partner, sharing stewardship of areas within its boundary with the public, other agencies and private landowners. The NPS would also continue to support activities on non-NPS lands consistent with the purposes of SMMNRA, such as wildlife habitat linkage and educational outreach work beyond the boundary. Actions would continue to emphasize cooperative relationships and planning. Direct management of lands owned by the NPS would continue to provide for operations, maintenance, resource management, education and resource and visitor protection.

Although SMMNRA has cooperative management authority for actions that relate to lands within the boundary, there has to be a clear relationship to the NPS mission for the park to use this authority outside the boundary. If the action clearly benefits SMMNRA and the resources it protects or provides for connections to SMMNRA recreational use, this linkage can be made. Because of limited staffing in some areas, such as landscape architecture and land use planning, however, the park has not often been in a position to take advantage of these opportunities. Nonetheless, the park has continued to use the legislatively identified Santa Monica Mountains Zone as a tool to comment on land use development plans within the zone but outside the boundary as was authorized by SMMNRA enabling legislation. Resulting from this, area land use planners have used park comments as a tool to minimize some adjacent incompatible development effects and to encourage additional land protection within the boundary. Although additional opportunities, such as partnering with agencies and organizations to provide trail access to the north side of the Simi Hills could occur, these ventures have largely been limited by a greater focus on protecting natural and cultural resources and because land use planning staff is already overextended. Other opportunities to work with partners could also be pursued if the park could assemble the necessary resources to work with area landowners.

Cooperative management authority is also integral to land protection within the boundary. For example, because partner agencies have fewer constraints on land purchases and can move with more agility to purchase lands and to negotiate with private landowners, cities and counties, some key lands that were originally slated for development have been protected as public land. Cooperative management would also continue to be used by the Juan Bautista de Anza National Historic Trail staff to promote designation of this route through the study area, an ongoing long-term beneficial effect. The NPS Rivers, Trails and Conservation Assistance Program (RTCA) would also continue to provide technical assistance for public outdoor recreation conservation purposes to state and local governments and community groups in support of natural resources conservation and outdoor recreation efforts.

Cooperative management has also been used to deliver interpretive and educational programs focusing on the resource protection and public use mission of the NPS in SMMNRA and other park sites outside of the boundary of SMMNRA, such as in downtown Los Angeles. Educating young people about the history and mission of the NPS and other public land management agencies in the Santa Monica Mountains has a potential indirect long-term beneficial effect on land use by encouraging and/or creating the next generation's land stewards. Similarly, adults participating in these programs often begin to get a sense of the network of parks available to them in the area, another indirect long-term beneficial effect from acknowledgement of the significance of protecting these areas for themselves, their families, and neighbors.

Under alternative A, it is likely that farmland not protected by voluntary conservation programs could continue to be developed, a long-term moderate adverse effect on prime and unique farmlands. Those lands most likely to be converted to other uses, including residential and urban development, include lands located close to or within city boundaries and lands whose value for development greatly exceeds their value for agricultural production. Trends in the study area over the past 50 years indicate that this conversion would continue to occur because of pressures associated with ongoing population growth. If this conversion was delayed or did not occur, these lands would continue to remain available as open space and would continue to enhance the scenic value of the surrounding landscape, particularly where they are adjacent to public lands.

Impacts from Alternative B

As in alternative A, local governments would retain land use authority within the areas identified for cooperative management. There would, however, be additional beneficial effects on protection of open space from seed money provided by the NPS for development of a cooperative management plan. The cooperative management plan could also be used by existing agencies, local governments, and private landowners to leverage additional funding and resources for open space protection within the Rim of the Valley Corridor partnership area.

It is likely that alternative B would increase access by other agencies and organizations to NPS expertise in conservation planning, vegetation, wildlife and fire management and other disciplines for conservation planning in the study area. Opportunities for increased access to educational and interpretive staffing and programming could also support conservation planning. For some agencies and organizations, this access would provide opportunities that would otherwise be limited, a long-term beneficial effect since this would likely continue beyond cooperative management plan development.

This alternative would also create a mechanism for the NPS to share information with its cooperative management partners, similar to the authority that is now available between federal agencies via the recent Service First Authority (2011). It is likely that cooperative management agencies could share resources, staffing and funding across jurisdictions during the plan development process and as that plan was initially implemented. If long-term authority for cooperative management was identified as part of this alternative there could be additional beneficial effects. Otherwise these effects would primarily be beneficial but most NPS direct involvement would last only through development of the cooperative management plan.

Through existing authorities, SMMNRA would continue cooperative efforts in some areas encompassed by alternative B where a link to the park was present.

Identification of nationally significant areas could result in local, state or national agencies or private landowners desiring to protect these sites, a long-term beneficial effect on land use.

Impacts to prime and unique farmland would be similar to alternative A, however because of the cooperative conservation plan which would likely encourage private land stewardship opportunities, there could be long-term minor beneficial effects on the protection of these lands.

Impacts from Alternatives C and D

State and local governments would generally continue to maintain regulatory authorities for nonfederal lands in Alternatives C and D. NPS regulatory authority would primarily pertain to lands owned and managed by NPS, with the exception of certain regulations in 36 Code of Federal Regulations (CFR) Chapter 1 including regulation of solid waste facilities, mining related activities, and the exercise of nonfederal oil and gas rights, which may apply to lands within the authorized boundary. Depending on what is specified in any potential future legislation that would authorize a boundary expansion, solid waste facilities, mining related activities, and the exercise of oil and gas rights could be affected by additional permitting and/or reviews by the NPS. As described in *Chapter 5: Alternatives*, Congressional legislation could specifically allow activities or uses that are not typically permitted in national park units. For example, some national park units allow hunting or mineral leasing because this use was specifically identified in the park's authorizing legislation.

As described under alternative A, SMMNRA works cooperatively with local and state agencies to manage lands in the national recreation area. NPS management policies typically apply to lands that NPS acquires. Local jurisdictions could, however, choose to use the expanded boundary as an opportunity to engage in partnerships to increase public lands within their jurisdiction adjacent to the boundary or to use it to spur additional public lands dedications as lands are developed.

Alternatives C and D state that any legislation proposed to implement study recommendations could specify that eminent

domain would not be used for NPS land acquisition. As within the SMMNRA boundary, the NPS would only consider acquiring land on a limited basis from willing sellers. As described in alternative A, designation would not impact local land use authority over lands not owned by the NPS. Land acquisition authority, where used, would continue to be completed in partnership with other agencies and organizations based on the SMMNRA model.

Although a boundary expansion would not establish additional regulatory or land use authority over local governments, lands within an NPS boundary could be protected by the NPS through purchase authorities, for land or easements. Because the NPS is not a regulatory agency, NPS land management policies and regulations would generally only apply to lands that the NPS acquires. Even with the authority to purchase lands within an expanded boundary, the NPS would only consider acquiring land on a limited basis from willing sellers. Such land purchases would also be based on direction from Congress and a land protection plan would be developed to identify priorities for land acquisition, easements and other use of land protection authorities, including cooperative management, compatible public and private lands, etc.

Because these alternatives allow for NPS land acquisition within their respective proposed boundary additions, they would emphasize protecting large areas of open space among urban areas or areas that facilitate protection of key wildlife corridors or open space connections. Because alternative D would provide a larger boundary addition, it could potentially have the most beneficial effects on protecting large areas of open space, including for wildlife habitat and visitor use.

Alternatives C and D would enhance the ability of the NPS to work actively to protect a connected system of public lands in the Rim of the Valley Corridor study area, a connected system that could create a stronger driver for open space protection in the greater Los Angeles and Ventura areas, albeit to a different extent in alternative C vs. D. Cooperative work with other federal, state, private and local land protection agencies and organizations could encourage local land use authorities to direct compatible land use adjacent to an NPS boundary when local land use plans are revised or developed as has generally occurred with the current SMMNRA boundary in alternative A.

As in alternatives A and B, areas of prime and unique farmland would likely continue to be converted to other land uses due to the pressures of population growth and development in the study area. Land acquisition of public open space proposed in these alternatives would be unlikely to include prime and unique farmlands; however, as in alternative B, these could continue to be protected through voluntary easements or other private land stewardship programs. There could, therefore be some minor beneficial effects. To the degree that these lands were protected, there would be long-term beneficial effects on nearby public lands related to improved protection for scenic resources and wildlife habitat linkages.

Cumulative Impacts

Although land use within the study area varies greatly, approximately 50% of it is protected as open space. Over time past projects have resulted in much of the study area lowlands being developed. Extensive urban and suburban development combined with pockets of rural development is crisscrossed by major national transportation corridors that allow the importation of goods and services to the ever-expanding population of the Los Angeles metropolitan area (*Figure 1-4: Population Density and Ethnicity Map* in *Chapter 1: Introduction*). SMMNRA is under intense development pressure. Whereas only 11% of the region was urbanized in 2000, urbanization might increase to as much as 47% of the area by 2050 (Delaney et al. 2010 in Stoms et al. 2010). Because most of the development remains within the valleys, public and private open space in the surrounding hills brings a fairly high quality to urban and suburban life to those living near the edges, providing scenic vistas, recreational opportunities, and open space that contributes to clean air. These areas also offer some of the most expensive housing in the region. In some areas, however, such as in the central regions of the San Fernando Valley and in downtown Los Angeles, there are fewer opportunities for people to access open space, particularly public lands. Overall impacts on land use in the region have been moderate to major with vast areas that do not retain natural characteristics. Nonetheless, there remain large undeveloped areas surrounding the cities and towns that function as native wildlife habitat and currently provide outstanding opportunities to link currently protected and unprotected areas for recreational opportunities and wildlife. As described in the natural resources condition assessment for SMMNRA, urban development within the park is relatively small compared to the surrounding metropolitan areas, with its accompanying air pollution, noise, and skyglow (Stoms et al. 2012:36).

Current and future projects would continue to add to the trends toward urbanization in the study area. Land use plans for cities and towns within the study area boundary would continue to add to the range of development currently present in the study area. In addition, future trends predict additional development. According to the natural resources condition assessment for SMMNRA, between 1940 and 2000, housing density within and around SMMNRA increased from suburban to urban density. Between 1990 and 2000, housing units increased by 4%, population by 7%, and developed land by 1% (Stoms et al. 2012:41). Environmental Protection Agency growth scenarios project more land in urban and suburban densities by 2050, with a strong shift from rural/exurban densities within SMMNRA toward suburban and urban land use classes in the coastal canyons by 2050 (Stoms et al. 2012).

Alternative A would have no new impacts on land use within the study area. Existing trends toward both public and private land conservation in the study area as a whole, land acquisition by SMMC/MRCA in the Rim of the Valley Corridor, and land acquisition by the NPS and other public and private land agencies in SMMNRA would continue resulting in long-term beneficial effects on urban quality. Private lands would continue to be regulated by counties and local jurisdictions. Alternative B could have negligible to minor beneficial effects on the protection of open space if the cooperative conservation plan resulted in additional public and/or private land stewardship opportunities that protected additional lands in the study area. Alternatives C and D could similarly add to protection of public lands in the study area and could have minor to moderate beneficial effects, depending on what lands were targeted for protection. Although the contribution to adverse cumulative effects would be small associated with alternatives A-D, because it would primarily be associated with minimal areas for recreational development (i.e. for facilities such as restrooms and signs), the contribution to cumulative effects associated with the purchase of private lands that would otherwise be developed could be minor to moderate, depending on the alternative and the ability of private and public agencies to steward this land protection.

Conclusion

Alternative A would continue to have minor to major long-term beneficial effects on urban quality in the portions of the study area where existing lands have been conserved for public open space by the NPS, private landowners, and other agencies, such as in SMMNRA. Where lands proposed for conservation and open space were developed, there would be a loss of open space resulting in long-term minor to major adverse effects on urban quality. Alternative B would have long-term beneficial effects similar to alternative A, however, if partner agencies and private landowners and organizations were able to conserve additional public lands through a cooperative management plan, there could be additional long-term beneficial effects. Alternatives C and D would initially have long-term beneficial effects similar to alternative A. Later, these beneficial effects could extend to other areas because additional lands would be added to the boundary of SMMNRA, for public recreational use and habitat connectivity (alternative C) and which could include legislative authority to protect wildlife habitat linkages (alternative D). Long-term minor to major adverse effects would continue to occur as key lands were developed in both alternatives but not as a result of this plan.

Paleontology Environmental Consequences

Impacts from Alternative A

SMMNRA would continue to contain one of the most extensive and diverse assemblages of fossil material known in the national park system. As described in the significance analysis in *Chapter 3*: *New National Park Unit Criteria Analysis,* there are at least 2,300 known fossil localities found in over a dozen fossil-producing geologic formations. These include a range of fossils of invertebrate, vertebrate, paleobotanical, protista, and trace fossils that range in age from the Late Jurassic to Pleistocene. Because of the proximity of SMMNRA to colleges and universities and large population centers, portions of the area within SMMNRA boundary and zone have been extensively studied. As described in the significance section, the diversity of the fauna, both marine and terrestrial, is extraordinary. Many new species have been named from the Santa Monica Mountains as a result of this research. There are also a variety of ongoing threats to SMMNRA paleontological resources, including erosion, unauthorized collection and development. As a result, there would continue to be minor long-term adverse and beneficial effects. Beneficial effects would include adding to the wealth of information about the paleontology of SMMNRA.

Sites in the study area but outside of protected areas, such as the Topanga Canyon amphitheater site, could continue to be threatened by illegal collecting and high rates of erosion, jeopardizing the potential wealth of paleontological resources, a long-term negligible to moderate adverse effect, depending on the loss and the significance of the site(s). For example, because of construction associated with the Mulholland Estates, some previously identified fossil fish localities are now inaccessible, however, according to Coastal Southern California Science and Learning, there is continuing potential for recovery of new specimens (NPS 2013d). Opportunities to learn about the number of fossil wood deposits identified within and surrounding SMMNRA would continue to be available; however, where these are protected there could be additional impetus to identify found materials, a long-term beneficial effect. Other opportunities like this could be lost due to private collecting, contributing to adverse effects.

Impacts from Alternative B

In addition to existing resources within the boundary of SMMNRA, at least three fossiliferous formations located in the Simi Hills and Santa Susana Mountains contain important formations not currently represented in SMMNRA (Las Virgenes, Pico, and Towsley formations). Adding these to the partnership area in alternative B could encourage additional NPS involvement in their preservation, a long-term beneficial effect. In addition, the study area encompassed by alternative B, includes a large number of fossils found in the Simi Hills and Santa Susana Mountains that would complement those contained within SMMNRA and which, if protected, could contribute to long-term beneficial effects on paleontological resources.

Impacts from Alternative C and D

Alternatives C and D would include fossil formations not currently represented in SMMNRA. Alternative D would also include some formations not in alternative C, including the Conejo volcanics, Sespe formation and the Llajas formation near Simi Valley. Expansion in the Simi Hills and in the eastern

Santa Monica Mountains would likely add a number of type specimens from various species, including seaweeds, fish and marine invertebrates. Because these areas would be added to SMMNRA, the NPS could conduct additional documentation or scientific studies and work with local governments and other public and private organizations to secure further resource protection. If additional sites containing paleontological resources were protected and studied, there would be long-term beneficial effects on understanding of these resources in SMMNRA which would be improved by understanding fossils in nearby and surrounding mountain ranges, such as the Simi Hills, and parts of the Santa Susana Mountains, the foothills of the San Gabriel Mountains and the Upper Santa Clara River, also included within these alternatives.

Cumulative Impacts

As with other study area resources, paleontological resources are threatened by the intense development pressure in the region. Where significant resources are identified for protection, there is support for public and private land stewardship to protect them, however, much of the area that contains these resources is not fully explored and more land is lost to development annually. It is therefore likely that key resources could continue to be lost. Past, current and future development projects would continue to occur in SMMNRA and in the Rim of the Valley Corridor study area and could continue to contribute to the loss or displacement of paleontological resources.

The contribution of the alternatives to cumulative adverse impacts on paleontological resources would be small. Although protection for these could be fostered under alternative A, it would be more likely that in this alternative possible protection would be undertaken by a private or public land stewardship, such as by an individual or directed purchase by a public land management organization only upon the direct threat of development. Under alternative B, the cooperative conservation plan could identify resources needing protection and thus take a more proactive approach to securing it through private or public land stewardship. Alternatives C and D could direct NPS and other public land acquisition funding toward protecting paleontological resources. Although their presence within an expanded SMMNRA would not guarantee protection, it could make it more likely that knowledge of their presence would be available and that this could engender support for their study and/or stewardship. It is likely, however, that under all alternatives, currently unprotected sites could continue to be threatened by unauthorized collection, development and erosion.

Conclusion

There would be a range of beneficial and adverse effects on paleontological resources in alternative A. Although protection for paleontological resources could be spurred by partnership opportunities in alternative B, this protection would be most likely to occur in alternatives C or D if sites containing paleontological resources were identified for new public or private land protection efforts by the NPS or partner agencies and organizations.

Water Resources Context

Hydrology

Portions of the study area lie within four major watersheds (Calleguas Creek, Santa Clara River, Santa Monica Bay, and Los Angeles River) as described in *Chapter 2: Resource Description*.

Tributaries in the study area include three major waterways (Upper Santa Clara River, Los Angeles River, and Calleguas Creek) as well as innumerable streams (including major creeks in the Santa Monica Mountains with 49 outlets to the ocean), several impounded lakes and natural and unnatural ponds. *Chapter 2: Resource Description* contains an overview of water resources and a historical account of water conveyance and flood protection within the study area.

Water Quality

Water quality criteria are numeric values or narrative descriptions of the physical, chemical, and biological characteristics of waters necessary to support their designated beneficial uses. Beneficial uses may include wildlife habitat, aquatic life habitat, rare, threatened or endangered species, migration of aquatic organisms, spawning, reproduction and/or early development, water contact recreation, non-water contact recreation, navigation, groundwater recharge, agricultural supply, municipal and domestic supply, industrial service supply, commercial and sport fishing, shellfish harvesting, etc. Water quality parameters include pH, turbidity, temperature, dissolved oxygen, alkalinity, nutrients, bacteria and toxic chemicals. These measures apply to surface and groundwater quality. The regulated water quality parameters for Class AA surface water include fecal coliforms, dissolved oxygen, total dissolved gas, temperature, pH, turbidity, toxic, radioactive or deleterious materials, and aesthetic value. States, territories, and Indian tribes set water quality standards for waters within their jurisdictions based on Environmental Protection Agency (EPA) standards. In turn, the state designated standards are approved by EPA. In California standards are set by the regional water quality control boards (RWQCB). Minimum standards for recreational waters (water contact) are dependent on the type and amount of water contact (e.g. from light bathing to designated bathing beach) and include routine testing for E. coli, enterococci, and fecal coliform. Water bodies that do not meet the standards for their designated beneficial uses are considered impaired.

Impairment of water quality is related to adverse human health effects. Human health effects are generally caused by the concentration of bacteria in water. Local and national epidemiological studies demonstrate that there is a causal relationship between adverse health effects and recreational water quality,

as measured by the density of bacterial indicator species. For example Beneficial Use Standards for Recreation-1 (minor swimming) waters in California have the following water quality objectives:

- pH - 6.5-8.5
- Turbidity- shall not exceed 5 NTU (over background level)
- Dissolved Oxygen- shall exceed 7 mg/L
- Fecal coliform – shall not exceed a geometric mean of 200 colonies/ 100mL and not have more than 10% of all samples collected exceed 400 col./100mL (CRWQCB 1994)

Water quality varies greatly throughout the study area, depending on land use, including the type and degree of development. Since a large portion of the study area consists of undeveloped mountains, these areas have few inherent impacts. Since a large portion of the study area is comprised of undeveloped mountains which are the headwaters of the rivers and streams that flow through the area, there are few inherent impacts. Among the impacts, however, include a high number of paved and unpaved roads and incursions for utility development. Within the study area are also a wide range of lowlands that have been adversely affected by development. Sources of water pollution include agriculture, industry, wastewater, garbage, and urban runoff. In some areas, there is widespread use of fertilizers, chemicals, solvents, and household products, including pesticides. This pollution comes from both point sources, such as from industry (including mining) and wastewater treatment plants, and non-point sources such as urban and agricultural runoff. Pollution levels vary based on the season (such as time between runoff events and the amount of runoff). For instance, the first runoff after dry periods is likely to have higher levels of pollutant concentrations.

The natural properties of water can also be contaminated by metals, nutrients, pesticides, bacterial and viral pathogens and garbage. Metal pollutants include zinc, cadmium, copper, chromium and nickel. These are found in discarded metals, paint, automobiles, automobile exhaust, and preserved wood, and can come from road and industrial runoff. High nutrient levels are the result of the use of chemical fertilizers, such as nitrogen and phosphorus, human and animal waste such as from wildlife and livestock operations, and effluent from wastewater treatment plants. Pesticides and other organic compounds come from construction and home use, and include adhesives, cleaners, sealants, and solvents, and pesticides. Bacteria and viruses include Escherichia coli, cryptosporidium, and giardia. Sources of these include poorly functioning septic systems, sewer leaks and spills, and fecal matter from humans and other animals. Garbage is another source of pollutants and may include yard waste, improperly disposed of pet waste, plastics and other trash, such as packaging. Several of these pollutants, including metals, pesticides and other organics can bioaccumulate in organisms, causing more harm to animals at the top of the food chain than to those lower in the food chain (LADPW 2006).

The Los Angeles Regional Water Quality Control Board has identified 38 water quality limited segments (primarily streams and beaches) within or near SMMNRA that do not meet standards for at least one of 37 pollutants. These pollutants span a range of nutrients, pesticides, pathogens, toxicity, metals, and others and are required to be addressed through Total Maximum Daily Load (TMDL) plans. The most frequent pollutants to be addressed are DDT, PCBs, indicator bacteria, and coliform bacteria. Segments of Calleguas Creek have as many as 14 pollutants identified. TMDL plans typically involve a contentious, time-consuming planning process. These water quality violations also represent a large number of stressors and pathways that can impact the aquatic resources in SMMNRA in complex, synergistic ways (Stoms et al. 2012).

Importance of Healthy Water Resources

Streams and rivers in the study area flow through diverse habitats, from mountain canyons, valleys, deserts, estuaries and urban areas. Riparian woodlands along stream banks and floodplains link forest, chaparral, scrubland, grassland, and wetlands (California Water Quality Monitoring Council 2013).

Healthy streams, rivers, and lakes provide safe drinking water, recreational opportunities, and important habitat for species ranging from the red-shouldered hawk to steelhead to crayfish and dragonflies. Maintaining healthy streams, rivers, and lakes can reduce the need for water treatment and water supply costs and make landscapes more resilient to climate change. To determine the health of a waterway and the flora and fauna that live there, investigators can use a combination of chemical, biological, and physical assessments. Among the characteristics that may be considered are habitat quality, aquatic life diversity, water chemistry, stream hydrology (water flow processes), the physical channel form, and sediment transport processes of the stream (California Water Quality Monitoring Council 2013).

Water Resources Environmental Consequences

Impacts from Alternative A

Water Quantity and Supply

Alternative A would have no effect on existing water rights, water supply (quantity), treatment, flood protection or other functions necessary to maintain the infrastructure associated with the public water supply in the study area. The infrastructure associated with various cities and Ventura and Los Angeles counties would continue to be managed under existing authorities and agencies. There would be no facilities or designations that would require new beneficial uses or changes

in requirements for managing water resources within the study area. Existing management of water, wastewater and sanitation facilities would continue in SMMNRA and on other public and private lands.

There would also continue to be adverse effects on area streams and other water resources from the increased availability of water, including from a range of nonnative invasive plants adapted to wetter areas, especially in formerly ephemeral streams. Summer flows have increased in historically intermittent streams. This has likely increased the vulnerability of these streams to nonnative invasive plants and animals. Increased summer flows may be attributed to runoff from irrigation of residential areas and parks from increased water importation, or from channelization, resulting in changes in evaporation rates (Cameron et al. 2005 in Stoms et al. 2012:115). There would also continue to be adverse effects related to an increase in nonnative aquatic wildlife attributed to increased water supply, such as from nonnative fish and crayfish in area streams.

Water Quality

Although impacts within the study area would continue to range from negligible to major from the immense variety of impacts to water quality, there would be a much smaller range of ongoing adverse and beneficial impacts attributable to alternative A from continuing protection of public and private parklands in this area, such as from State Park, SMMC and NPS involvement in SMMNRA and NPS actions in other authorized areas.

Water quality in rivers and creeks would continue to vary greatly in different locations throughout the study area, depending primarily on the level of development and existing or planned land use. According to the SMMNRA *Natural Resources Condition Assessment*, runoff generated from developed areas has placed increasing pressure on fresh water resources. Runoff from urbanized areas (e.g., roads, parking lots, residential areas) may occur more quickly and with higher concentrations of pollutants than before development.

Runoff from developed areas could also contain elevated levels of nutrients (such as phosphorous and nitrogen), pathogens, toxicants (e.g., heavy metals), and litter and trash loads. According to the Natural Resources Condition Assessment, Malibu Creek and many of its tributaries, Topanga Creek, Solstice Creek and beaches east of the Los Angeles/Ventura County line have been identified as water quality limited for various pollutants and have therefore been listed as impaired as required by Section 303(d) of the federal Clean Water Act (Stoms et al. 2012:14).

Recreation and Visitor Use

In SMMNRA, actions that would affect water quality would continue to include impacts from maintenance of trails, resource management activities such as treatment of nonnative invasive plants, and recreational use (such as from horseback riding). These mostly short-term impacts would continue to range from negligible to minor and widespread to moderate localized impacts, depending on the activity.

Soil disturbance to construct trails would also continue in SMMNRA and on other public park lands and could affect soil stability, resulting in erosion. This in turn can cause sedimentation of nearby water bodies and reduce water quality by increasing turbidity and nutrient loads. Because mitigation measures would continue to be used by SMMNRA and on other federal and state parklands, these effects would be minimal (negligible to minor). Ongoing analysis of projects to determine project specific impacts and potential mitigation measures would continue to occur on NPS lands.

There would continue to be negligible to moderate localized adverse effects from visitor use on water quality, including from inadvertent actions, such as erosion caused by use of trails when wet, despite widespread trail closures on many parklands after seasonal rains. Ongoing interpretation and education related to water quality impacts from recreational use would also continue to have negligible to minor indirect beneficial effects on water quality by educating visitors about how to avoid impacts prior to their occurrence.

Watershed Protection Efforts

Ongoing beneficial effects would also continue to be provided in the study area by individual organizations and public entities. These include open space zoning by Los Angeles County associated with areas in the San Gabriel Mountains and foothills for watershed protection; ongoing efforts of the Watershed Conservation Authority / Rivers and Mountains Conservancy to provide open space, habitat restoration and watershed improvement projects in the lower portions of the Los Angeles River; and ongoing efforts of the Resource Conservation District of the Santa Monica Mountains (RCDSMM) to promote water conservation and improve water quality, among others. The RCDSMM also provides on-site consultations for home and business owners on how to save water, money and improve water quality by initiating sustainable landscaping solutions on their property. In addition, the *Greater Los Angeles County Region Integrated Regional Water Management Plan* provides funding for projects that meet its goals, including optimizing local water resources to reduce reliance on imported water, improving the quality of runoff to meet beneficial use requirements for receiving water bodies, increasing the number of wetlands, aquatic buffers and wildlife linkages, increasing watershed friendly open space, and reducing flood risk (LADPW 2006).

There would be indirect beneficial effects from ongoing cooperative management of parklands, including protection of watersheds and limited additional development. With land

protection strategies, there would likely be fewer opportunities for additional point source water quality degradation to occur, a long-term beneficial effect.

Nonnative Invasive Plant Treatment
Soil disturbance to remove nonnative invasive plants and would continue to have both beneficial and adverse effects on water resources. Mitigation measures would continue to be employed to reduce or eliminate risks.

Existing Restoration Efforts
Within the study area, there would continue to be cooperation among the signatories to the Santa Monica Mountains cooperative management agreement to identify and protect key water resources, address nonnative invasive plant removal and to assess aquatic species, such as fish and amphibians. Restoration treatments in riparian areas or near other aquatic resources may improve water quality by reducing erosion and sedimentation, where vegetation was used to stabilize stream banks.

Existing partnerships to improve water resources would also continue. These include efforts to improve the Los Angeles River and its tributaries, cooperative efforts to improve Santa Monica Bay and efforts by regional non-profit organizations to secure land for open space protection.

Research and Monitoring
Limited funding for restoration, planning, and public education in the region to address water quality impacts would likely continue to contribute negligible to moderate adverse impacts on water resources under alternative A. As additional information is gained through research, however, these effects could be mitigated through best management practices and cooperative actions among land management agencies, a long-term beneficial effect. Already, renewed monitoring of water resources in SMMNRA has contributed to a better understanding of the effects of development and options for restoration.

Impacts from Alternative B
Impacts would be similar to alternative A. Ongoing impacts to water quality and water quantity from development as well as specific impacts related to restoration and recreational use in the area would continue as would beneficial effects from restoration and protection of public lands. Under alternative B, no specific actions that would affect water resources are proposed, however if identified in the cooperative management plan, there could be an emphasis on increased protection of open space (thereby conserving watershed lands) and habitat enhancement through private land stewardship that could have a beneficial effect on water resources in the study area.

Impacts from Alternative C
Impacts would be similar to alternative A. Alternative C, however, would provide opportunities for the NPS to engage in and support more restoration opportunities within the expanded boundary area. Beneficial effects could occur from conservation of additional lands by the NPS or other agencies and organizations if these included important water resources. Because many of the lands within the proposed boundary expansion are at higher elevation than surrounding developed areas, preservation of water resources could have long-term beneficial effects on downstream beneficial uses. Where protection occurred, there would also be long-term beneficial effects from preservation and fewer potential future adverse effects (such as from development). There would also likely be more resources dedicated to visitor education that could indirectly result in fewer potential adverse effects from recreation (for example, from adverse effects related to use of wet trails).

As in alternative A, development of new trails or other facilities to support visitor use could disturb soils. Any subsequent action by the NPS to develop such facilities on newly acquired lands would undergo project specific analysis to determine impacts and to identify potential mitigation measures to prevent these, a long-term beneficial effect. Similarly, actions on other public lands would continue to be subject to a variety of federal and state permits and regulations and would be modified as appropriate to meet the conditions of these permits thereby avoiding most adverse effects.

Impacts from Alternative D
Impacts in alternative D would be similar to alternative C; however, these could affect some additional areas with similar beneficial and adverse impacts. As in alternative C, implementation actions on NPS lands would be analyzed and mitigation measures for adverse effects would be identified. As in alternative C, any implementation actions on other public lands would continue to be subject to environmental analysis to comply with federal and state permits and regulations related to water quality.

Cumulative Impacts
Given the breadth of the area encompassed by the natural watersheds and the fact that more than 5 million people live in and adjacent to the study area, while 18 million live within close proximity, existing effects on water resources across the study area encompass a wide range of actions and adverse and beneficial effects. The development of local water resources has been integral to the growth of the greater Los Angeles metropolitan area. In addition, because of a wide range of natural threats to the area, including related to major stormwater runoff and high rates of erosion, water development has included construction of major detention basins and reservoirs as well as lining of river and stream channels with concrete. As a result, effects on water resources within the study area would continue to range from negligible to major from the immense variety of impacts to water resources, particularly with regard to water quality.

Although the contribution to cumulative impacts from proposed alternatives would generally be small (negligible to mi-

nor and localized), when combined with other past, present, and foreseeable future actions, there would continue to be negligible to major cumulative impacts on water resources.

Conclusion

Alternative A would continue to have no effect on water quantity or water supply management actions in most of the study area. Where public lands are protected, there would continue to be negligible to moderate direct and indirect beneficial effects. Actions to manage recreational use and to construct visitor facilities would likely continue to have negligible to minor, and occasionally the potential for moderate, localized adverse effects. Actions in alternative B would be the same as alternative A, except that there could be additional beneficial effects if the conservation plan resulted in protection of additional public lands. Impacts from alternatives C and D would be similar to alternative A, with additional beneficial effects from protection of lands for conservation purposes if these contained important water resources and additional adverse effects from actions associated with recreational use of these public lands. Because alternative C would likely include more degraded lands and more recreational opportunities, there could be slightly more adverse effects in alternative C as compared to alternative D. Some of these effects could be offset by the emphasis on restoration efforts in the implementation of alternative C.

Biological Resources Context

As a Mediterranean-type ecosystem, southern California is one of the world's hotspots of biological diversity. As noted in the resource description and significance analysis, this region supports more than 30% of California's native plant species while comprising less than 10% of its land area (CDFG 2008). The region also contains more endemic plant and animal species than any other U.S. ecoregion (Stein et al. 2000). The ecoregion has also experienced tremendous population growth and related urban development since the 1940s. Rural, suburban and particularly urban development has dramatically transformed the native landscape. In addition, some of the areas within and adjacent to the study area have also been dramatically transformed by the region's highly productive agricultural lands. The intersection of high biological diversity and urbanization has made southern California the most-threatened biologically diverse area in the continental U.S. (CDFG 2007).

With the expansion of the urban wildland interface, since the 1970s, remaining natural lands in the area are increasingly vulnerable to nonnative invasive plants and animals, air and water pollution, and the direct and indirect effects of human use and development, such as increased use of pesticides, including rodenticides, and frequent fire (most fires are human caused). These effects have been both intentional (use of herbicides and nonnative plants from landscaping in the wildland urban interface) and unintentional (e.g. the contribution of frequent fires to type converting shrub lands to nonnative grasslands). Many of these changes have also occurred over time, and pre-date urban development. For instance, the use of the area for large ranchos and grazing of cattle and sheep facilitated the conversion of native shrubland and grassland to nonnative annual grasslands dominated by European annual grasses and predated urbanization. As described in previous sections of the study the importation of water to this semi-arid environment and creation of regional and national transportation corridors facilitated widespread development in the region.

Developed areas, which are primarily located in valleys but also located on some hillsides and canyons, along with their associated roads, and utility corridors, have fragmented landscapes and severed or begun to sever remaining connections between the large blocks of undeveloped public and private lands in the surrounding mountains. Many of the study area native habitat types are severely reduced from their former range. Among the rare communities within the study area include riparian areas, wetlands, native grassland, California walnut woodlands, and others. Other rare communities, such as big-cone Douglas-fir and subalpine areas have become even more limited in extent. Many rare, threatened, or endangered species within the study area are found in ever smaller areas. Altogether, there are 35 rare communities recognized by the California Native Plant Society and the California Department of Fish and Wildlife in the study area (*Table D.5: Imperiled Vegetation Communities* in *Appendix D: Resource Inventories*). Further study would likely reveal additional rare species and habitats. The persistence of some large and medium-sized mammals is dependent on their ability to move through areas of intact habitat. This habitat connectivity, or linkages between large habitat patches, has become progressively limited, and if lost has the potential to isolate wildlife populations in areas where their long-term persistence may be unsustainable.

In response to these issues, public and private agencies and organizations in the Santa Monica Mountains and beyond have protected large areas of key resources in the Rim of the Valley study area. As a result, there are opportunities to connect these areas and to ensure the long-term persistence of key vegetation and wildlife communities, many of which continue to prosper in the surrounding mountains because of the efforts of local, state and federal agencies and organizations and despite the effects of ever-increasing development.

Vegetation Environmental Consequences

Setting

Due to the complex topography, fire history and transitional habitats the diversity and assemblage of unique vegetation associations within the study area is important and would add to the diversity of plant communities protected within SMMNRA if these areas were protected (Tiszler 2013). The study area captures transition zones, including from foothills covered with chaparral to the western Mojave Desert and from valley bot-

tom to high elevation forest. As a result, there are a variety of native plant communities in these areas that are not currently part of SMMNRA. In addition, several of these plant communities are relatively rare, including a pure stand of elderberry in Towsley Canyon, relict big-cone Douglas-fir, and the alluvial fan sage scrub found in Tujunga Wash and the Upper Santa Clara River system.

The study area also contains eight areas that have been identified in the Los Angeles County General Plan as Significant Ecological Areas (SEAs). These are areas of high priority for regional conservation (note that areas in parentheses are within SMMNRA):

- Altadena Foothills and Arroyos
- Griffith Park
- Santa Clara River
- (Santa Monica Mountains)
- (Point Dume)
- Santa Susana Mountains and Simi Hills
- Verdugo Mountains
- Tujunga Valley / Hansen Dam

Within the study area, many species such as big-cone Douglas-fir and valley oak are also at the edge of their range. These populations at the edge of their range can have a wider climatic tolerance and are important to preserve because they may have characteristics that may help the species survive as the climate continues to change (Craine and White 2011).

Impacts from Alternative A

There would continue to be a wide array of beneficial and adverse effects on vegetation, ranging from actions to modify public lands for recreational use (such as for construction or rehabilitation of trails) to preservation of rare, sensitive and common native plant communities in the study area, especially on lands protected in perpetuity by federal, state and private agencies and organizations.

Land Protection Efforts

Beneficial effects would continue to result from the protection of native vegetation communities on public lands within the study area and related efforts by local communities and public and private agencies and organizations to add to this base of protected lands. Since establishment of SMMNRA in 1978, protected public lands within the Santa Monica Mountains have increased from 22 to 52%. Today, roughly 80,000 acres of the land within the 153,250-acre SMMNRA (almost 25% of the study area) are preserved for resource protection. This has resulted in long-term beneficial effects on vegetation for an expansive variety of plant communities, from wetland and riparian to various types of chaparral and oak communities to the wide coastal slope comprised of coastal sage scrub. Another 27% of the study area is protected by the U.S. Forest Services as part of the Angeles National Forest and San Gabriel Mountains National Monument. These U.S. Forest Service managed areas contains numerous sensitive and rare plant communities. Outside of the major protected areas within the study area (SMMNRA and the U.S. Forest Service managed areas) approximately 23% of the lands are protected by public agencies and conservation organizations. In these areas there are also rare plant communities not currently represented in SMMNRA, such as big cone Douglas-fir, alluvial fan sage scrub, and others.

When possible SMMNRA staff would continue to comment on projects within the Santa Monica Mountains zone and these comments could continue to be used by public planning officials to mitigate or limit the effects of development on SMMNRA resources. (Land use planners frequently have the ability to direct the intensity or location of the development toward more durable areas and away from sensitive resources and/or to require setbacks or open space as part of these development projects.)

Although the effects associated with development are primarily adverse when associated with vegetation communities, there would continue to be direct and indirect long-term beneficial effects where development is concentrated in currently disturbed areas and where it results in developer dedications or set-asides, for the preservation of open space as required by some communities within the study area. A variety of local community park agencies, state entities and non-profit organizations have made themselves available to manage public land donations and/or to purchase and/or manage these set-aside public lands themselves. Where this occurred, there would continue to be long-term beneficial effects. Adverse effects would continue to occur from the conversion of intact natural habitat to development.

Nonnative Invasive Plants

There would continue to be a wide range of threats to vegetation from the proximity to urban, suburban and rural development and from the sensitivity of Mediterranean ecosystems to nonnative plant invasions, opportunistic colonizing and establishment of nonnative species. According to the SMMNRA Natural Resources Condition Assessment, the most vulnerable locations in SMMNRA are often the lower reaches of the coastal canyons, and along roads and trails where the invasive populations occur in or near disturbed or highly landscapes with the high potential for being invaded. SMMNRA currently has over 10,000 populations of more than 300 species of nonnative invasive plants (Stoms et al. 2012:110-112). Where control efforts for invasive plants have been effective, there is substantial opportunity to reduce further establishment of these species. In shrub-dominated communities, including chaparral and coastal sage scrub, there is limited invasion by nonnative species. In many grasslands and some riparian areas, however, invasive plants may comprise more than 80% of

plant cover. Although SMMNRA has implemented some small scale restoration projects, primarily along streams, widespread restoration is currently considered infeasible based on the scale of the degradation of grasslands and continuing threats from new invasions associated with nonnative plant landscaping in communities located within and surrounding SMMNRA. In addition, priorities have been focused on protecting additional public lands to protect existing native plant and wildlife communities, rather than on restoration of degraded areas. As a result, these long-term adverse effects would likely continue in most areas pending project specific restoration and/or a change in overall land management priorities.

In SMMNRA and in the U.S. Forest Service managed areas, nonnative invasive plant management programs such as early detection rapid response could result in control of some newly established nonnative species, a long-term beneficial effect. Elsewhere, control would occur on public and private lands in compliance with state and county noxious weed laws and could also limit the spread of or contain the most invasive species.

Fire

Fire is a natural process in the grassland and shrub-dominated ecosystems of southern California. Fires at the right place and in the right season can have a wide array of beneficial effects on plant communities, such as fostering plants which need fire to allow them to produce seed and recycling nutrients back into the soil. Fires also often result in stunning displays of post-fire wildflowers. These beneficial effects are evident in the study area, including SMMNRA following fire; however the area is also facing impacts from too frequent fire intervals in some areas close to development. Although, overall fire frequency does not seem to be increasing in SMMNRA, some areas within the study area are experiencing shorter fire return intervals. The mean fire rotation interval for the Santa Monica Mountains subsection for the period 1946-2008 was 34 years, which is shorter than many chaparral-dominated landscapes in California but still within the historical range of variability typical of many chaparral landscapes (~20-60 years) (Stoms et al. 2012:118).

Shorter fire return intervals of seven years or less can greatly reduce the density of non-resprouting chaparral shrubs (although many chaparral and coastal sage scrub species do resprout from their root-crown, which lies just below the soil surface). Native communities are not resilient enough to withstand short fire return intervals and as a result, type-conversion to nonnative annual grasslands can result. Short return fires have occurred at least once across 13.8% of the Santa Monica Mountains subsection and 15.6% of SMMNRA (Stoms et al. 2012:118). Fire return intervals of 12 years, which are considered a threat to non-sprouting chaparral species, have occurred across 25% of the Santa Monica Mountains and 28.9% of SMMNRA (Stoms et al. 2012:118). Therefore more than 35% of the area is experiencing shorter return intervals for wildfires. The places most vulnerable to this are the western Santa Susana Mountains (South Mountain, Oak Ridge, and Oat Mountain), the Simi Hills, and the ocean-front canyons of the Santa Monica Mountains above Malibu (*Figure 2-9: Fire Frequency* in *Chapter 2: Resource Description*) (Stoms et al. 2012). These areas are currently dominated by annual grassland and coastal sage scrub.

Habitat Restoration Efforts

Actions to provide for habitat restoration and other resource-enhancement projects would continue throughout the study area, including efforts by agencies such as the Resource Conservation Districts of the Santa Monica Mountains and Ventura. Although these projects often have short-term adverse effects during implementation, most also result in long-term beneficial effects including from vegetation restoration.

Research and Monitoring

Long-term research and monitoring projects would continue to have indirect beneficial effects on vegetation from better understanding of plant community changes, species interactions, and the effects of fire on native vegetation.

Recreation and Visitor Use

Within the study area public and private agencies undertake a variety of actions to provide for public use, including the development of trails and trailheads and associated facilities, such as small parking areas and restrooms), re-use of existing buildings, location of administrative and research facilities and other actions. These actions would continue to cause negligible to moderate localized adverse impacts on vegetation, including from removal and alteration. There would also continue to be long-term minor to moderate localized beneficial effects where vegetation was restored, native landscaping planted or nonnative invasive plants removed.

Agencies that manage parklands would continue to implement planned trail systems such as the Rim of the Valley and Los Angeles River trails. As a result, there would continue to be long-term, minor to moderate localized impacts on vegetation as sections of the trail were constructed.

Ongoing use of recreational facilities in SMMNRA, the Angeles National Forest, San Gabriel Mountains National Monument, the Juan Bautista de Anza National Historic Trail and on other existing public and private parklands would primarily continue to have negligible to minor adverse effects from visitor use, including from trampling of vegetation near trails, creation of social trails, off-trail travel, as well as from occasional illegal activities, such as harvest of plants or cutting of vegetation.

Impacts from Alternative B

The range of beneficial and adverse impacts from alternative A would likely continue but actions within the study area could benefit from the expanded partnership authority associated with this alternative.

Because many species within the study area are at the edge of their range and may therefore have wider climatic tolerance, there could be long-term beneficial effects from partnerships to preserve individuals, species and communities within the study area that have ecotypic and genetic variability that will likely continue to grow in importance as climate change continues.

There are also many narrow endemic species, mostly with unknown specific habitat requirements. With more connectivity between public lands, there may be more opportunities to facilitate resiliency for these species. For example, protection of the Conejo Volcanics would allow for preservation of rare species associated with these, such as dudleyas, a long-term beneficial effect.

Many of the plant communities in the study area would also add to the diversity of species in SMMNRA because some are found at higher elevations than are present in SMMNRA. Although many plants and plant communities within SMMNRA are rare in southern California, they are often not globally rare. Where SMMNRA took the lead in establishing inventory and monitoring programs for these additional resources, there could be long-term beneficial effects from better understanding of some species and habitat types.

In alternative B, sister agency and private land stewardship would be relied upon to protect native plant communities in areas outside of SMMNRA. It is likely that a collaborative plan would identify a range of optional stewardship strategies to protect vegetation and vegetation communities, however, participation would continue to be voluntary. Although there could be long-term indirect beneficial effects from development of the plan, implementation would be uncertain because no one agency would serve as a coordinator. The SMMC, however, which is authorized to conduct land transactions in the study area would likely continue to identify and purchase key parcels and could continue to manage these, including the Rim of the Valley Trail, via the MRCA. Because SMMNRA's partnership authority for these areas would be expanded, there could also be ongoing technical assistance for public outdoor recreation conservation purposes from the NPS in this broader area.

Efforts to protect plants and plant communities would continue to rely on inventory and monitoring data. Because many sister agencies in SMMNRA do not have resources to conduct studies, many might continue to look to the NPS for data and expertise, an action that could improve with the opportunities for NPS to partner with agencies with similar goals regarding land protection and vegetation research in the study area.

Alternative B could also offer public and private park land managers the potential for additional coordinated studies to better understand the ecological occurrence of fire throughout the region and how changes in fire frequency may affect the long-term persistence of some vegetation communities, especially as climatic changes continue.

Partner agencies could work to leverage greater funding for conservation (open space protection) in the area encompassed by alternative B. Although this alternative would designate a large area for partnerships, there would be nothing to preclude additional development in the area. Although other partner land management and conservation agencies and organizations could continue to purchase land within the partnership area, the NPS would not have that authority in this alternative.

Because there could be additional land protection by partner agencies that would also allow for recreational use of lands they manage, there could be an array of negligible to moderate localized adverse effects from the potential for increases in recreational use, including because trails are often conduits for nonnative invasive plants to spread. For instance, the Rim of the Valley Trail would continue to be constructed in segments by partner agencies and use of this trail would continue to have both minor to moderate localized adverse and beneficial effects on vegetation from construction and use, and from long-term maintenance of the trail that could result in nonnative invasive plant removal and restoration in some areas.

Impacts from Alternative C

As in alternative B, a diversity of plant communities not currently protected by SMMNRA would be encompassed by this alternative. In alternative C, however, these areas could be targeted for select land acquisition, if deemed important in a land protection plan and if they also supported the recreational intent of this alternative. Other plant communities currently represented in SMMNRA would be expanded and/or diversified by including new areas within a potential boundary adjustment. Among these would be the remnant valley oak savanna near Chatsworth Reservoir and on the north face of the Santa Susana Mountains near Oat Mountain.

Adding the area within alternative C to SMMNRA would result in more efforts by SMMNRA and its partner agencies to work toward broader actions to protect resources in the study area. This could translate into resource protection measures such as habitat restoration, conservation, and research in targeted vegetation communities. Instead of relying solely on private and other public land stewardship, and volunteer efforts to protect public lands (as in alternative B), the NPS could become a partner in targeted land acquisition efforts that would protect additional vegetation communities, especially those near urban areas that are also available for recreational use.

Because the expansion area would include a wide range of intact and altered habitat areas as well as a wide range of ownership by federal, state, local and private agencies and organizations, any one of these agencies or organizations, including

interested area homeowners associations, could also undertake the preservation or restoration of a unique area. For example, because the emphasis in alternative C would be on reaching out to urban audiences, there could be more opportunities for these groups to adopt land protection and restoration efforts close to urban communities in adjacent protected wild lands and semi-natural portions of the Los Angeles River and its tributaries. This could result in more interest in preserving these lands by adjacent cities and towns and/or more interest in conducting other local restoration projects to ensure that these areas do not become degraded by adjacent urban and suburban uses. Partnerships in alternative C could also improve coordination for monitoring and restoration activities, resulting in more opportunities to obtain funding through grants and agency requests and more opportunities to coordinate and solicit volunteers to carry out the activities.

In alternative C there would be increased potential for new land purchases to protect key resources, such as habitat linkage parcels and rare habitats. The NPS could work with partner agencies and organizations to identify and protect these key resources, a long-term beneficial effect. Where lands were purchased or donated, future development of these would be precluded. Where this occurred, there would be long-term beneficial effects from protection of plants and plant communities.

Although there would be more opportunities for restoration of degraded plant communities, as in alternative A, the focus of the cooperative network of land managers would likely continue to be on preserving intact areas where possible prior to restoration of degraded areas. Partners could collaborate to identify the most vulnerable areas, a long-term beneficial effect on vegetation from increasing the range, size and diversity of protected areas.

Because there would be additional land that could be made available for recreational use, there could also be some localized minor to moderate adverse effects from providing for recreation trail use and other incidental facilities associated with protecting and providing for use of acquired lands.

Impacts from Alternative D

Impacts to vegetation in alternative D would be similar to alternative C; however instead of a focus on restoration and urban community participation, there would be a broader focus on wildlife habitat linkage protection that could also encompass urban community participation and restoration efforts and emphasize opportunities for private land stewardship. Because wildlife habitat linkages are primarily comprised of vegetated areas, there could be additional protection for an expanded array of plant communities and unique species. Habitat connectivity could improve the resilience of vegetation communities to perturbations, such as fire and climate change, allowing for migration of native species between patches via seed dispersal.

As in alternative C, the NPS would accept an overall role of coordination, which could result in better coordination among partner agencies. If this happened, it could improve the ability to synthesize data from studies in similar habitat types and lead to a better understanding of needs to enable the persistence of some vegetation communities and habitat types in the study area, especially for wildlife populations.

As in alternative C, there could be an increase in recreational opportunities on public lands from NPS and other agency purchases of areas suitable for such use within the study area. This potential for increased water and land-based recreational opportunities, where there has been no or light use, could result in a minor adverse effect on wildlife and wildlife habitat from noise and disturbance.

Cumulative Impacts

As noted in the resource description section, many of the region's native plant communities have been displaced due to grazing, agriculture, and ultimately, urban development. Almost all of the native plant communities that remain contain sensitive, rare or endangered flora and fauna.

Because the native California prairie was well-suited for grazing and irrigated agricultural lands, shortly following development of valleys for missions and ranchos, this native prairie virtually disappeared. The array of native bunchgrasses was replaced by an influx of nonnative European annual grasses. Dominant species, were perennial bunchgrasses including purple needlegrass (*Nassella pulchra*), nodding needlegrass (*Nassella cernua*), foothill needlegrass (*Nassella lepida*), and crested needlegrass (*Achnatherum coronata*). Herbaceous plants such as such as wildflowers, sedges, and bulbs were also common (Burcham 1957).

Future shifts in temperature and precipitation patterns are likely to stress native plant communities and open additional opportunities for invasive species. Climate-induced changes in fire regime can also increase the frequency or severity of fire that would also provide disturbed niches for invaders (Stoms et al. 2012:115).

As development continues and private lands are converted, there would continue to be major changes, including loss of native plant communities in some areas. This would be combined with protection of plant communities by public and private agencies and organizations in the study area.

Outside of protected lands within the study area, there could continue to be a range of impacts, including direct, indirect and cumulative adverse and beneficial effects from development. Development, including low density single family homes, small suburban tracts, and adjacent or sometimes urban land use in natural habitat within the study area, including on private lands in SMMNRA would continue to have a wide range of negligible

to major adverse effects on native plant communities. Impacts include the loss and fragmentation of native plants and plant communities in isolated areas and additional opportunities for nonnative invasive plants to colonize and spread from bare ground created by access roads and grading of home sites and other disturbance.

Over time as additional land is developed in the study area, high urban growth rates and sprawl may slow the rate of increase in fire frequency because development reduces the proportion of natural vegetation (fuel) in the landscape (Stoms et al. 2012:127). Urban growth decreases wild vegetation and increases fragmentation and fire ignitions but may also contribute to reducing fire size due to the proximity of higher value resources (i.e. homes) at risk. Greater fire frequency can also stimulate the invasion of nonnative plants and/or cause type-conversion from communities adapted to less frequent fire, such as chaparral to communities adapted to more frequent fire, such as grasslands. This may increase the overall flammability of the ecosystem (Stoms et al. 2012:127).

When the effects of alternative A are combined with the cumulative effects of development and other public and private past, present and future projects, alternative A would continue to have cumulative moderate to major adverse and beneficial effects. Alternatives B-D would have similar adverse and beneficial effects, however, there would be the potential for greater cumulative beneficial effects from alternatives C and D because these alternatives would allow for additional protection of sensitive and/or important vegetation communities by the NPS and other land management agencies in a coordinated and/or systematic fashion based on ongoing analysis of the importance of these in the study area.

Conclusion

Alternative A would continue to have a range of beneficial and adverse effects. Beneficial effects would be contributed by a variety of direct and indirect actions, the most important of which would continue to be long-term protection of vegetation communities in SMMNRA by the NPS and partner agencies and in the study area by other public and private agencies and organizations. Other beneficial effects would be contributed from restoration actions. Adverse impacts would continue to be related to actions to provide for public recreational use, including for trails and other facilities. Negligible to minor localized impacts would also likely continue to occur from visitor use. Alternative B would have the potential for additional beneficial effects on vegetation if the cooperative management plan resulted in additional protection of plant communities not found in SMMNRA or targeted restoration of important areas. Alternatives C and D would have greater long-term beneficial effects from a coordinated approach to protection of plant communities and from improved cooperative actions by public, private entities and organizations to manage them. Protection of more areas could allow for plant community resilience as the area continues to develop and change.

Wildlife Habitat Connectivity Context

As described in *Chapter 2: Resource Description,* connectivity between open space habitat is essential to the preservation of biodiversity in the South Coast Ecoregion. Multiple interdisciplinary studies, including the South Coast Missing Linkages project and the California Essential Habitat Connectivity project, have identified key corridors/wildlife habitat linkages for preservation in the region, including several in the study area.

The NPS is actively involved in identifying critical habitats to ensure that sufficient open space remains in SMMNRA and that these areas are connected with habitat linkages or wildlife movement corridors (NPS 2002). A 2003 recreational use study demonstrates the importance of preserving wildlife habitat in the Santa Monica Mountains. In that study, when asked to choose the most important reason for protecting the Santa Monica Mountains, most (53.2%) visitors identified providing habitat for plants and animals; 22% identified providing recreational opportunities; and 21.6% identified both reasons, while only 2.0% had no opinion and 0.5% stated another reason. As noted in the study, "when combined with those visitors who were unable to choose between conservation and recreation (21.6%), strongly positive attitudes towards nature are clearly dominant among park users (USC 2003:45 in NPS 2003)."

Wildlife Environmental Consequences

Impacts from Alternative A

There would continue to be a range of direct and indirect beneficial and adverse effects on wildlife from existing public and private agency and organization management actions within the study area. Among these actions include conservation and administration of public lands, and providing for public use, interpretation and education on public lands within SMMNRA and other currently protected lands in the study area. These actions would continue to occur in an area where habitat fragmentation resulting from the construction of roads, housing and other suburban and urban land uses is continuing (see cumulative effects).

Recreation and Visitor Use

The existing array of recreational opportunities and access would continue to have long-term minor to moderate localized adverse and negligible to minor beneficial effects on wildlife and wildlife habitat from continued visitor use of the trails and from the ability of wildlife to travel easily through dense shrub environments on the trails. There would also continue to be minor to moderate localized adverse effects on wildlife and wildlife habitat from the construction of trails and facilities to provide for public use. These actions would continue in SMMNRA. Other similar actions in the study area would be at the discretion of existing agency and organization landowners/managers and could have similar effects. Planned trails within SMMNRA would also have similar effects.

Resource Protection

Current efforts by local, state, and federal agencies to manage wildlife, restore habitat, and protect wildlife corridors would continue to have long-term beneficial effects, although regional coordination would limited except within SMMNRA and as associated with other endeavors, as well as in the Rim of the Valley Corridor study area associated with the SMMC/MRCA (as mentioned above). For instance, there would continue to be long-term beneficial effects from agency and organization efforts to conserve and restore native ecosystems and habitat. There are approximately 340,000 acres of public lands in the study area that are managed by a variety of federal, state, local and private agencies and organizations. Conservation of these lands is immensely important to wildlife in these areas, particularly medium- and large-sized mammals. Ongoing management of these areas and continued land acquisition by agencies and organizations in the study area would therefore continue to have moderate to major long-term beneficial effects on these wide-ranging species. Under alternative A, NPS land protection efforts would be limited to existing land within SMMNRA boundary. SMMNRA, however, would continue to work collaboratively on regional efforts to protect wildlife corridors and to share research and scientific expertise on conserving wildlife in the surrounding urban setting.

Implementation of management actions on study area lands outside SMMNRA would continue to be at the discretion of agency and organization owners/managers but could contribute to overall beneficial effects if restoration or other improvements were made. In conducting potential projects, stakeholders would continue to have some NPS and/or government programs available to them, including grants and partnership coordination via current programs of the Rivers, Trails and Conservation Assistance program. Coordination of these projects, however, with other Rim of the Valley landowners and managers would likely be on a case-by-case basis as the need or opportunity arose.

Habitat Loss and Fragmentation

Threats to wildlife resources, including from habitat loss and fragmentation as a result of development, air and water pollution, and altered fire regimes could continue to have minor to moderate localized and/or widespread adverse effects on the viability of species and ecological communities. Among these include effects of chronic skyglow from urban lights, as well as direct glare and intermittent lights such as car headlights, that can create "ecological light pollution" and are known to affect behavior, navigation, reproduction, communication, competition, and predation in some species (Longcore and Rich 2004, Rich and Longcore 2006 in Stoms et al. 2012:142). In addition, because the mountains are crisscrossed by numerous roads, there would continue to long-term moderate adverse effects on wildlife from the presence of these roads, which in addition to the effects of road kill, make it difficult for wildlife to move within the mountains, as well as to disperse and migrate. As noted in the California Essential Habitat Connectivity Project, the ecological footprint of a road network extends far beyond its physical footprint because of vehicle caused wildlife mortality, habitat fragmentation, and other indirect impacts, such as by encouraging additional development once this infrastructure is in place (Spencer et al. 2010: xvi). The severity of these impacts varies among species, with smaller species generally able to survive in fragmented areas and larger species needing to move between patches, however there are numerous actual and anecdotal contradictions to this as is evidenced by small species, such as mice and voles crossing roads at night and birds, which are able to fly between both large and small patches.

Direct effects from roads include wildlife mortality, habitat fragmentation and loss, and reduced connectivity. According to the California Essential Habitat Connectivity Project, the severity of these effects depends on the ecological characteristics of a given species. Direct roadkill affects many species, with severe documented impacts on wide-ranging predators such as the cougar in southern California, the Florida panther, the ocelot, the gray wolf, and the Iberian lynx in other parts of the country and world (Forman et al. 2003 in Spencer et al. 2010:140). In a 4-year study of 15,000 km of road observations in Organ Pipe Cactus National Monument, Rosen and Lowe (1994) found an average of at least 22.5 snakes per km per year killed due to vehicle collisions (Spencer et al. 2010:140).

Roads also cause habitat fragmentation because they break large habitat areas into smaller habitat patches, which, in turn, support fewer individuals and this can increase the loss of genetic diversity and increase the risk of local extinction (Spencer et al. 2010:140). Roads may also block access to essential physical or biological features necessary for breeding, feeding, or sheltering. In addition to these obvious effects, noise from traffic or road construction may alter habitat use and activity patterns, increase stress, reduce reproductive success, and increase predation risk for terrestrial vertebrates (Bowles 1995 and Larkin et al. 1996 in Spencer et al. 2010:140). Roads are conduits for the spread of nonnative invasive plants and animals. Roads also promote erosion and create barriers to fish, and pollute water sources with roadway chemicals (Forman et al. 2003 in Spencer et al. 2010:140). Recent studies have demonstrated that vehicles can deposit hundreds of nonnative invasive plant seeds per square meter per year to roadside areas, often from several kilometers away (von der Lippe and Kowarik 2007 in Spencer et al. 2010:140). Highway lighting also has important adverse impacts on animals (Rich and Longcore 2006 in Spencer et al. 2010:140).

Wildlife Habitat Connectivity

Wildlife and wildlife habitat would continue to benefit from conservation of public lands in SMMNRA and beyond in the areas currently protected by other federal, state and local agencies and organizations in the study area boundary. Although

the area is fragmented at local and regional scales, there would continue to be efforts by SMMNRA and other private and public agencies and organizations to protect lands and to identify and protect wildlife habitat linkages and corridors that connect SMMNRA protected areas to other large landscape blocks.

There are several regional efforts to connect wildlife habitat in the study area. For instance, the connection from the Santa Monica Mountains through the Simi Hills to the Santa Susana Mountains and the Sierra Madre Mountains is shown as part of the California Essential Habitat Connectivity Project map (produced by CalTrans, among other agencies and cooperators, including the NPS) (Spencer et al. 2010). This report found that the area between SMMNRA and the Los Padres National Forest is 62% privately owned and unprotected. By overlaying the area with the California Protected Areas Database this analysis also showed that 33% of the area is in some form of park or open space management (46,000 of nearly 126,000 acres), although not necessarily conserved for biodiversity and connectivity (Stoms et al. 2012: 10, 134). The Natural Resources Condition Assessment documents that two-thirds of the area is vulnerable to land use change that could further reduce its connectivity value. This report also describes the area's importance for nine federally listed species, and five essential habitats identified by the USFWS as well as for 23 plants and 37 animals tracked by the California Natural Diversity Database. The Natural Resources Condition Assessment also emphasizes opportunities for connections from SMMNRA to U.S. Forest Service managed areas.

For instance there is an ongoing effort by the USFS, and local and state land conservancies to connect the two separate units of the Angeles National Forest. As noted in the California Essential Habitat Connectivity Project report, a functional network of connected wildlands is essential to the continued persistence of diverse natural communities in the face of human development and climate change (Spencer et al. 2010:1).

Medium and Large Mammals

Although the target species for wildlife habitat connectivity is often mountain lions, protecting additional lands and connectivity would also benefit a range of wildlife species, including medium and small mammal such as bobcats and ringtail cats. Large contiguous blocks of habitat would be most beneficial, and including those with water resources would be especially important for the range of species that would not benefit from narrower wildlife "corridors."

Connectivity also benefits small animals and plants by allowing gene flow between populations, therefore potentially allowing them to adapt to changing conditions, including climate change.

Where lands remained unprotected, it is likely that some species present in disconnected habitat patches, such as red racer snakes, would be lost. The red racer or red coachwhip, is found in southern California from Ventura county to the Baja California border, including in the eastern Sierra Nevada Mountains (California Herps 2013). These snakes are currently found in the Simi Hills but have not been found in similar habitat where that habitat has been separated from other intact areas, even in relatively large habitat patches (Stoms et al. 2012). Therefore it is important to look at connectivity for wildlife on several scales within the study area. Appropriate research could have long-term indirect beneficial effects on some species by identifying additional habitats that should be protected.

Research conducted by SMMNRA would continue to provide data that would substantiate wildlife habitat linkages and movement corridors and facilitate their protection by other public and private agencies and organizations in the study area. Direct protection of wildlife corridors by the NPS through either land donation or acquisition, however, would be limited to areas within the existing boundary of SMMNRA. Outside of this area, the NPS would be precluded from purchasing or accepting land to facilitate these landscape connections.

As documented in SMMNRA general management plan, the 8-10 lane U.S. Highway 101 freeway has eliminated most options for north-south connections between the Santa Monica Mountains and Simi Hills, which if maintained would enable mountain lions access through the Santa Susana Mountains to the Los Padres National Forest. There are still a few opportunities, however, such as at Liberty Canyon. Another option on the west end of the Santa Monica Mountains exists to link the Santa Monica Mountains to the Los Padres National Forest by crossing the Conejo grade. Under alternative A, the NPS would continue to work with partner agencies and organizations to identify these areas and to work with the California Department of Transportation and Federal Highway Administration on a long-term plan for them. If viable connections are established, there would be long-term beneficial effects on wildlife habitat connectivity, especially for medium and large mammals.

The NPS would continue to participate in regional landscape conservation projects such as the California Essential Habitat Connectivity Project and the South Coast Missing Linkages project. The NPS would also continue to conduct research via the Mediterranean Coast Network (an NPS research partnership that includes several national parks in southern California) and would therefore continue to advocate for protection of these areas. Working within the boundary of SMMNRA, the NPS would continue to protect large blocks of core habitat that could help to establish connections between these and other areas. Work outside the boundary would continue in alternative A where there are clear linkages to protecting wildlife and other resources within the boundary. Among these would be long-term beneficial effects from using resource management staff to provide technical expertise on conservation of wildlife corridors and habitat and restoration in urban areas and participation in existing planning efforts to link habitat

connections such as the South Coast Missing Linkages Project. This participation could improve the situation noted above for SMMNRA connection to nearby blocks of protected land. NPS and other environmental protection staff have been identifying the potential for connecting SMMNRA to other protected areas for years, including for identifying and increasing the number of potential ways that large mammals can travel between protected habitat areas.

In the no action alternative, protecting wildlife corridors would be the responsibility of existing agencies and landowners. If protection of wildlife habitat linkages occurs in the study area, there would be long-term beneficial effects. These efforts would come from federal, state and local agencies and organizations working independently to protect land for wildlife habitat linkages in the study area. Among these agencies are the Santa Monica Mountains Conservancy, Mountains Recreation and Conservation Authority, California Department of Fish and Game, U.S. Fish and Wildlife Service, and other local park and open space management agencies in cities and towns in the study area.

As noted above, agencies working to protect lands for wildlife and other resource purposes would also continue to have access to NPS technical assistance for public outdoor recreation conservation purposes and to conservation programs, such as opportunities to obtain funding for land conservation through the Land and Water Conservation Fund grant program. Although competitive, this program could be accessed using existing authorities, although specific actions would likely continue to occur in response to development and on a case-by-case basis.

NPS and partner actions in SMMNRA and other actions in the study area would also continue to be supplemented by other efforts going on in the region, including California Essential Habitat Connectivity and the South Coast Missing Linkages (SCML). Based on the report, 10 of the 11 SCML studies' designs are being actively implemented by cooperating groups of agencies, non-governmental organizations, and other stakeholders (Spencer et al. 2010:61). For example, there is a multiagency effort to connect the San Gabriel Mountains to the Sierra Pelona/Castaic Mountains.

SMMNRA research would also continue to expand documentation regarding the need to maintain ecological connectivity to areas beyond the legislated area of the park so that species, such as mountain lions, can persist in the Santa Monica Mountains. Without this connectivity, the Santa Monica Mountains are only large enough to sustain a mountain lion population of 8-10 animals, too few to maintain long-term viability because of the potential for inbreeding depression and the propensity for males to kill each other when territories are spaced too closely together (Riley et al. 2014).

Although in some parts of the study area vegetation is degraded, such as in the relatively widespread presence of nonnative grasslands, these degraded habitats retain some natural values, as hunting and foraging areas for small and medium-sized mammals, reptiles and birds. Although the Los Angeles River generally does not contain much native habitat, it would continue to provide open space values and could provide habitat linkages for some species, such as medium-sized mammals and birds that may travel through, or live in the natural bottom (riparian) portion of the river.

Amphibians

Irrigation in landscaped areas within the boundary of SMMNRA and the study area would continue and combined with increases in built surfaces, would continue to increase surface runoff. As residential development progresses outside SMMNRA and within the study area, it would continue to alter aquatic habitats and may promote the growth and spread of invasive aquatic species. Within SMMNRA, there would continue to be ongoing beneficial effects from researching native amphibian use and applying the findings to protect aquatic amphibian populations. Among the actions identified would include NPS collaboration with local communities and developers to identify best management practices for stream-friendly land use to protect aquatic amphibian populations. Stream friendly land use actions include working with others to identify ways to avoid increasing water flow in naturally dry streams and filtering runoff before it enters streams. Other management actions have included removal of nonnative species, such as crayfish from aquatic habitats and experimental re-introduction of red-legged frogs. Among the other species that could benefit from aquatic habitat rehabilitation include California tree frogs and California newts. Currently Pacific tree frogs continue to be common in suitable habitat. Where additional habitats were protected for these species in the study area, there would be long-term beneficial effects. Opportunities to improve habitat and increase monitoring efforts could also assist these species.

Reptiles

A variety of reptiles persists in appropriate habitat in SMMNRA and in the study area. Some of these, such as those limited to specific habitats (for instance, horned lizards) could also benefit if additional habitat is protected in the Rim of the Valley Corridor.

Birds

Within the study area, Point Mugu and the Santa Clara River have been identified by the Audubon Society as Important Bird Areas. According to the program, important bird areas provide "essential habitat for (i) rare, threatened or endangered birds, (ii) exceptionally large congregations of shorebirds, or (iii) exceptionally large congregations of waterfowl" (Spencer et al. 2010:99). Although the designation does not provide regulatory authority, it could be used to leverage conservation resources

and efforts to conserve the habitat, therefore providing indirect long-term beneficial effects.

Fish

There would be long-term beneficial effects from the NPS and its partner agencies continuing work in SMMNRA to protect Arroyo Sequit, Malibu Creek, and Topanga Canyon, which still support extremely rare spawning runs of the federally endangered southern California coast distinct population segment of steelhead. As noted in the resource description section, historically, steelhead were known from Solstice and Zuma canyons as well, and it is likely that all the major drainages, which once had perennial water and extended to the shore in the rainy season supported this species. In the study area, several agencies are also working to protect Santa Clara River habitat for native fish including southern steelhead, unarmored three-spine stickleback, tidewater goby, Santa Ana sucker, and arroyo chub (LADPW 2005).

Research and Education

Ongoing research by SMMNRA and through the Mediterranean Coast Network would continue to have long-term indirect beneficial effects on wildlife and wildlife habitat connectivity in SMMNRA and beyond. This research provides information that the NPS and its partner agencies can use to enhance protection of wildlife and wildlife habitat by providing science-based evidence of impacts and vulnerabilities and the network helps by disseminating this information to land use planners and the public.

SMMNRA and other agency research has also directed attention regarding the use of rodenticides and the subsequent potential for effects on wildlife. To the degree that these efforts continued and were used by local jurisdictions to modify behavior, there could be long-term beneficial effects on wildlife. SMMNRA has documented secondary exposure of non-target wildlife populations to anticoagulant rodenticides in and around developed areas (Riley et al. 2007). In the absence of regulatory actions restricting the use of rodenticides and other toxicants, wildlife exposure to these toxicants would continue to adversely affect wildlife, although more research is needed to determine population level effects on susceptible species. Development also subjects wildlife to predation from domestic animals (Lepczyk et al. 2003), fragments habitat for wide ranging carnivores (Riley et al. 2006), and exposes wild animal populations to infectious diseases, such as canine distemper, harbored by domestic animals (Daszak et al. 2000). All of these effects would continue under alternative A (Stoms et al. 2012).

Ongoing educational and interpretive opportunities directed at increasing park staff and public knowledge about wildlife issues in SMMNRA and beyond would continue. Among these include occasional publications, such as resource briefs (on amphibians and mountain lions) through the Mediterranean Coast network and programs published in Outdoors in the Santa Monica Mountains. These would continue to have direct and indirect beneficial effects by encouraging residents of SMMNRA to avoid using rodenticides and by increasing opportunities for better understanding (and therefore encouraging protection of) area wildlife.

Impacts from Alternative B

As in alternative A, there would continue to be a range of beneficial and adverse effects on wildlife from existing public and private agency and organization management actions within the study area as well as from existing conditions, such as roads and development within the study area boundary. In addition, in this alternative the cooperative conservation plan, if implemented could have additional long-term beneficial effects.

Recreation and Visitor Use

Impacts would be the same as in alternative A, with adverse and beneficial effects on wildlife from visitor use, and construction of trails and facilities to provide for public use. In alternative B, the cooperative conservation plan would guide future agency actions to develop or maintain sections of the Rim of the Valley Trail and other important areas in the study area for recreational use. Actions to implement the plan would be at the discretion of existing agency and organization landowners/managers.

Where agencies worked to develop additional sections of the Rim of the Valley Trail and other regional trails, impacts would be the same as in alternative A. Additional indirect impacts on wildlife would be associated with NPS supporting planning and implementation of the trail through technical assistance and partnerships. As in other alternatives, the trail would be owned and managed by partner agencies and organizations, who would determine specific actions that would be undertaken.

Resource Protection

As in alternative A, there would continue to be long-term beneficial effects on wildlife from agency and organization efforts to conserve and restore native ecosystems and habitat in existing protected areas within the study area. Unlike alternative A, there would be potential long-term beneficial effects from development of a cooperative conservation plan that could extend the benefits of protected areas in a coordinated effort across the study area if implementation of the plan were to occur. If common goals in the cooperative conservation plan included measures for protecting important bird areas and wildlife habitat connectivity, there could be long-term beneficial effects. Although the emphasis would be on private land stewardship, the wide array of public agencies and organizations with land in the study area would likely continue to be major participants in wildlife habitat protection, a long-term beneficial effect.

Wildlife Habitat Connectivity

The cooperative conservation plan would likely benefit wildlife and wildlife habitat connectivity. Agencies and organizations would work together to identify a range of common goals for connecting habitat. The plan would also identify incentive programs and technical assistance opportunities for private land stewardship strategies to protect habitat and to maintain or create habitat linkages. In alternative B, having such a plan could provide the impetus to protect these areas, however as in alternative A, promoting such actions would be at the discretion of individual agencies, landowners and organizations and would also likely evolve on a voluntarily case-by-case basis under the guidance of the plan. Where connections between areas of protected public lands were prioritized and implemented by plan partners, wildlife would benefit. As in other alternatives, connectivity to the Santa Susana and Sierra Madre Mountains and to the San Gabriel Mountains is most important to enable mountain lions and other wide-ranging species to persist over the long-term in SMMNRA and other locations within the study area, such as the Verdugo Mountains.

There could be long-term beneficial effects in alternative B from enhancing regional efforts to connect wildlife habitat in the study area, such as opportunities to work with organizations and agencies responsible for the California Essential Habitat Connectivity Project (Spencer et al. 2010) and other agencies and organizations that have identified connectivity corridors, such as were identified in the Natural Resources Condition Assessment (Stoms et al. 2012).

The value of these connections to areas outside SMMNRA is high. There is evidence that wildlife is using the few existing underpasses that are available. For instance, several studies have documented the use of the bridge at Alamos Canyon that links the Simi Hills and the Santa Susana Mountains. Species using this connection include mountain lion, bobcat, coyote mule deer, striped skunk, raccoon, small mammals and birds (Ng 2000, Psomas 2002, LSA 2004 in South Coast Wildlands 2008: 11). In October 2013, a mountain lion was also struck and killed by a car at the Liberty Canyon area, which has long been believed to be one of the best opportunities to connect the Santa Monica Mountains with the Los Padres National Forest. This area would also facilitate connection to the Angeles National Forest/San Gabriel Mountains. DNA analysis of the remains of this animal confirmed that it originated in the Los Padres and that, therefore, it could have introduced new genetic material to SMMNRA population.

Research and Education

Impacts would be similar to alternative A. In addition, in alternative B, there would be new opportunities to engage people living in nearby communities more actively through citizen science efforts and through coordinated interpretive messages about wildlife. These opportunities, however, would need to be coordinated voluntarily by one of the partner organizations. Where possible, partners could engage key educational and research institutions to implement plan recommendations. If this occurred, there could be long-term beneficial effects on wildlife and wildlife habitat connectivity.

Impacts from Alternative C

Impacts from alternative A related to development and loss of wildlife habitat connectivity would continue. In addition to beneficial effects noted from agency and partner management actions, there would be a range of new opportunities to protect wildlife and wildlife habitat connectivity in SMMNRA from potential expansion of the boundary to encompass areas identified in alternative C. The focus of alternative C, however, would primarily be on connecting additional urban communities to recreational opportunities in Rim of the Valley Corridor parklands added to SMMNRA. Nonetheless, these areas would also provide new opportunities to restore habitat connections between the Santa Monica and San Gabriel mountains.

Recreation and Visitor Use

Impacts associated with recreational opportunities and access would be similar to alternative B, however, there would likely be a wider range of impacts on wildlife from the emphasis on engaging more people to experience recreational opportunities in areas close to them. Relying more on public transportation to expand these opportunities could result in more people at one time accessing some areas. There could also be more development of trails and programs to promote use of them. Combined, there would be additional short- and long-term minor to moderate localized adverse effects from noise and disturbance and from loss of vegetation in wildlife habitat, depending on where this access was provided.

Resource Protection

The current range of long-term beneficial effects from agency and organization efforts to conserve and restore native ecosystems and habitat in existing protected areas within SMMNRA and in the Rim of the Valley Corridor study area would continue and would be expanded by NPS authority to purchase lands within the boundary expansion area, a long-term beneficial effect. These land purchases could potentially be targeted toward areas that enhanced urban residents' connection to parklands, as identified by the NPS and partner agencies and organizations.

Wildlife Habitat Connectivity

The NPS could provide technical assistance, including planning and funding, to protect wildlife habitat linkages. With NPS involvement and authority for land protection, opportunities to guide actions within the study area would be enhanced. Combined with agency and staff expertise in wildlife and land use planning this could facilitate protection of areas more than in alternative A or B. There would also be long-term beneficial effects from using NPS resource management staff to

provide technical expertise on wildlife corridor conservation and habitat and restoration opportunities in urban areas. If protection of these areas could be enhanced through partnerships identified in a cooperative conservation plan, the high conservation value of this area in its own right as well as its benefits to SMMNRA to provide habitat connectivity could be realized.

Research and Education

NPS entities, including SMMNRA and the Mediterranean Coast Network would continue existing wildlife research as in alternatives A and B. In addition, this research would be expanded to encompass additional areas added to the boundary in alternative C. If additional research provided an expanded nexus for protecting wildlife habitat connectivity for SMMNRA, there could be long-term beneficial effects.

As in alternative B, there could be more opportunities to engage people in urban communities in citizen science opportunities. In alternative C, however, these opportunities would be led by the NPS and would include additional targeted outreach to urban residents, who could learn more about wildlife and efforts to conserve them and potentially support future opportunities for park land conservation, a long-term indirect beneficial effect.

Impacts from Alternative D

Alternative D would have impacts similar to alternative A from existing agency and partner management actions within SMMNRA and in the study area. Existing impacts within the study area related to wildlife habitat fragmentation from development would also continue. Alternative D, however, would provide the most new opportunities to protect wildlife and wildlife habitat connectivity in the study area. These opportunities would primarily be a result of potential expansion of the SMMNRA boundary to encompass a much broader portion of the study area. Because alternative D would also have a focus on protecting wildlife and wildlife habitat connectivity, these opportunities would also have more likelihood of being implemented. As in alternative B, there would also be cooperative conservation efforts to encourage private land stewardship as a means of conserving habitat connections beyond the proposed SMMNRA boundary expansion toward the Los Padres and Angeles national forests.

Recreation and Visitor Use

Impacts associated with recreational opportunities would be similar to alternative C, however, there would likely be a fewer impacts on wildlife because visitor use would likely be spread out over the much larger area identified by this alternative, allowing greater flexibility in identifying appropriate locations and providing more locations closer to where people live. There would also be more opportunities for NPS to own or manage segments of the Rim of the Valley Trail because the entire conceptual trail system would be within the proposed boundary adjustment.

Resource Protection

As in other alternatives, the current range of long-term beneficial effects from agency and organization efforts to conserve and restore native ecosystems and habitat in existing protected areas within SMMNRA and in the Rim of the Valley study area would continue. As in alternative C, this would be expanded by NPS authority to purchase lands within the boundary expansion area, a long-term beneficial effect. These land purchases would potentially be targeted toward significant resources, wildlife habitat connectivity and key recreational connections.

Wildlife Habitat Connectivity

As in alternative C, with NPS involvement and authority for land protection and technical assistance, opportunities to guide actions within the study area would be enhanced. Combined with agency and staff expertise in wildlife and land use planning this could facilitate protection of more areas, a long-term beneficial effect. Public and private agency and organization partners could work together to protect wildlife corridors.

As in alternative B, if partnership actions through collaborative plan development and other venues could enhance protection for connecting SMMNRA to the Los Padres and Angeles national forests, there would be long-term beneficial effects on wildlife habitat and habitat connectivity. Although some areas within SMMNRA boundary would be closer to these connections, as in alternative B, these efforts would need to rely on partnerships since the actual connections would remain outside the boundary.

Private land stewardship would be a key component. Those efforts to undertake cooperative conservation actions that do not rely on federal acquisition would have long-term beneficial effects on wildlife habitat connectivity and could provide a model for protecting areas in other places, providing long-term beneficial effects.

Research and Education

The beneficial effects of new NPS research efforts would be the same as in alternative C, except that the expanded area encompassed by this alternative would likely have extended benefits for research opportunities. This research could be directed at understanding plant and animal responses to habitat destruction and fragmentation to better manage this important biodiversity hotspot, as the climate continues to change (Delaney et al. 2010).

As in alternatives B and C, there could also be more opportunities to engage people in urban communities in citizen science opportunities. These opportunities would be led by the NPS and could include additional targeted outreach to urban residents as well as additional engagement with partners in providing programming. As is currently contained in Outdoors in the Santa Monica Mountains, NPS could provide a link to the network of partners that offer programs. Combined, these actions would have direct and indirect beneficial effects on wildlife

and wildlife habitat connectivity by providing support for these actions and by encouraging others to protect areas near them.

Cumulative Impacts

The long-term impacts of urbanization, including removal of native vegetation, spread of nonnative invasive species, loss and harassment of wildlife by pets, effects of artificial lighting, noise, pesticides (including rodenticides and herbicides), changes in fire regimes, air and water pollution and altered water regimes will continue and would continue to affect wildlife. Other effects, such as an increase in the number of residential and commercial developments, roadways and people would also continue and would continue to have minor to major localized and widespread adverse effects.

Over time, the wildlife habitat and connections have become lost or fragmented. In some cases, these are so severely fragmented that major species are no longer present in suitable habitats. Although there are now a variety of conservation initiatives to link habitats and to prevent species loss and the southern California ecoregion is recognized as a unique biodiversity hotspot important for conservation, it is likely that development of remaining unprotected habitats would continue. In fact, population projections show continued loss of land development from development over the next 30+ years. The Los Angeles greater metropolitan area population is projected to increase by 4 million by 2035 (SCAG 2012). Thus lands in the study area will likely become ever more valuable for both people and for providing wildlife habitat and will likely be devoted to one of these uses in the near future.

To the extent that wildlife crossing structures, such as overpasses and underpasses, including bridges and culverts are constructed in the future, wildlife movement in the region could improve. This is especially true where agencies and organizations are already working together to evaluate needs and to plan for future connectivity. However, because the loss of individual animals is continuing and discontiguous habitat persists, the ability of these structures to provide relief and connectivity for wildlife in the study area is diminishing as additional development occurs. Because species vary tremendously in their reactions to roads, fences, and different types of crossing structures, the California Essential Habitat Connectivity Project calls for multiple types of crossing structures to be constructed and maintained. It also notes that the structures should be spaced close enough to allow free movement by species with different spatial requirements, and fencing should keep animals off the road and direct them towards crossing structures (Spencer et al. 2010: xvii). Because this need is recognized, there is currently support, but limited funding for modifying major freeways, such as U.S. Highway 101. CalTrans is currently evaluating road-crossing improvements as part of transportation projects along Highway 101 near Liberty Canyon and along the California State Route 118 freeway near Alamos Canyon in the Santa Monica-Sierra Madre Connection (Penrod et al. 2006), both of which have long been identified as critical for maintaining connectivity in the region (Soulé 1989, Sauvajot et al. 2000, Riley et al. 2003, Ng et al. 2004, LSA 2004, Riley et al. 2005, Riley et al. 2006). Therefore, over time, it is likely that the focal species identified by the California Essential Habitat Connectivity Project would continue to be most affected by habitat fragmentation. These include area-sensitive species (those with large area requirements, which are often the first to disappear when connectivity is lost); barrier-sensitive species (those least likely to traverse roads, urban areas, canals, agricultural fields, or other features); and less mobile species (habitat specialists and those with limited movements) (Spencer et al. 2010:xv).

Under alternative A, the area encompassed by SMMNRA would continue to be protected and would have beneficial effects on wildlife and wildlife habitat connectivity within the study area. The approximately 340,000 acres of protected land in the study area would continue to provide a variety of natural and altered wildlife habitat. When combined with other actions in the study area, actions in alternative A would contribute negligible cumulative adverse and minor beneficial impacts. Overall cumulative effects, however, could be moderate and adverse, depending on the degree to which wildlife and wildlife habitat is affected by additional development of existing open space within SMMNRA and the study area. If irrevocable loss of wildlife habitat connectivity occurred, adverse effects in SMMNRA and other isolated public lands could be major for some species.

In the action alternatives, the cumulative effect of growth and land use trends, plus the beneficial effects of protecting additional public lands would have minor to moderate cumulative beneficial effects on wildlife and wildlife habitat connectivity. These effects would likely be greater in alternatives C and D than in alternative B, with the greatest beneficial effects potentially coming from alternative D because it has the potential to spur the protection of the most public land. Identification and protection of critical wildlife habitats linkages could also help to protect these through partnership and private land stewardship actions. If actions did not protect important movement corridors or habitats, however, cumulative adverse impacts to wildlife would be similar to alternative A (moderate to major).

Conclusion

Alternative A would likely continue to have long-term beneficial and negligible to moderate localized adverse effects from ongoing activities in SMMNRA. The actions of other agencies in land conservation and habitat restoration would also likely contribute long-term beneficial effects in the study area. To the extent that SMMNRA and others conducted research, and agencies and organizations working together in the study area continued to identify and moved toward implementation of protection for wildlife habitat linkages and movement corridors, there would be long-term beneficial effects. Alternative B would have similar long-term beneficial effects from land protection and actions to protect wildlife in SMMNRA. In the study area, alternative B could provide the direction needed for

agencies and organizations working on their own to conserve resources and to protect lands, a long-term indirect beneficial effect. Alternatives C and D would provide for additional land conservation by the NPS in the study area that could be directed toward wildlife and wildlife habitat protection. Actions in alternative D would be likely to result in greater long-term beneficial effects due to the broader management direction in that alternative and the larger area encompassed within the proposed boundary adjustment.

Special Status Species Environmental Consequences

Impacts and Context of Alternative A

Numerous plants and animals within the study area are listed as rare, threatened or endangered (*Table D.6: Rare Plants* and *Table D.7: Rare Animals* in *Appendix D: Resource Inventories*). Because of its location in southern California the study area contains one of the highest concentrations of rare species in the U.S. Because of the extensive development in southern California, the importance of the California floristic province as a hotspot of biodiversity and ongoing population expansion, numerous natural communities have also become limited in extent. These communities may have originally been restricted to areas targeted for development, such as valley oak savanna in the flat valley bottomlands or walnut woodlands, or may have become limited in extent due to the widespread consequences of human use in the area, such as the effect on native grasslands from the introduction of grazing and European annual grasses (*Table D.5: Imperiled Plant Communities* in *Appendix D: Resource Inventories*). The loss and alteration of wetland and riparian habitats has been particularly devastating in some parts of the study area, because streams and rivers have been channelized and lined with concrete, dramatically reducing habitat values. Use of water for development and the importation of water and its runoff into these areas has also had widespread effects. These species and communities are threatened by the related effects of human uses in the study area as described above in the Wildlife and Vegetation sections.

Where lands are protected in public parklands from the ongoing threats of agricultural, industrial and urban development, public and private agencies and organization land managers would continue to survey for and protect rare species, including in SMMNRA, a long-term beneficial effect. These current efforts by land managers to manage sensitive plants and wildlife, restore habitat and protect large contiguous areas of habitat would continue to have beneficial effects.

Outside protected areas, these species would continue to be subject to degradation and loss of habitat as the effects of ongoing agricultural, industrial and urban development continue, with minor to major adverse effects, depending on the species, its population and location. As part of this critically important landscape, these remaining natural lands are important for the conservation of sensitive species. Simultaneously, because of existing impacts they are also more vulnerable to ongoing threats associated with human uses. As described elsewhere, developed areas, roads and utility corridors have fragmented landscapes, severing connections between core areas of habitat. As a result, those lands currently protected in the study area by the SMMC, cities and other public land management entities would continue to be important and it is likely that these agencies and organizations would continue to target remaining rare species habitats for protection. In alternative A, this would continue to be without overall coordination.

Impacts from Alternative B

Actions and impacts in alternative B would likely be the same as in alternative A, except that there would be potential for coordination because of the development of the cooperative conservation plan. This coordination could result in spurring individuals, communities and public agencies or organizations to protect additional sensitive species habitat, a long-term beneficial effect.

Impacts from Alternative C

Actions and impacts in alternative C would be similar to alternatives A and B, except that there would be potential for new land purchases to protect sensitive species and habitats where these intersected with protecting additional lands for close-to-home urban recreational opportunities. Ongoing purchases of lands for public use by SMMC and cities and towns within the area encompassed by alternative C and the opportunity to do so by the NPS would prevent further degradation of these areas from development. As a result there could be long-term beneficial effects.

Impacts from Alternative D

Actions and impacts in alternative D would likely be the same as in alternative C, except that there would be a focus on connecting habitats to promote long-term resiliency of biological resources in the boundary adjustment area combined with continued focus in SMMNRA to protect and enhance habitat and connectivity between parks, habitat areas and open spaces. This expanded focus would be consistent with protecting rare species and habitats and, among the alternatives, would likely provide the greatest beneficial effects on conserving rare species and habitats. The alternative D boundary adjustment would also protect additional areas rich in endemics and special status species, including not only the Santa Susana Mountains, but also the Conejo Mountain area and the Upper Santa Clara River within the Soledad basin, thus providing greater opportunities to protect species diversity.

Cumulative Impacts

Ongoing development for a wide array of human uses has contributed to the loss of species and habitats over time. Combined, these direct impacts (habitat loss) have led to a variety of other indirect impacts (habitat fragmentation) and resulted

in a near crisis situation for many species and habitats. This has been mitigated by specific land purchases and dedications for some species and other more widespread land protection for habitat conservation. Although some species and habitats are likely secured from additional loss within the study area, others remain at risk.

Alternatives A and B would continue existing land uses and trends and would offer only slight improvements to the protection of sensitive species and habitats since these would continue to rely on proactive conservation by a limited number of public land management agencies and organizations. Alternative B, however, with a cooperative conservation plan, could target some additional conservation efforts toward the most sensitive species by identifying and promoting this in the plan, a negligible to minor beneficial effect. Alternatives C and D would provide the likeliest venues for additional sensitive species and habitat conservation because these would add lands to the boundary of SMMNRA. Adding lands to the boundary would promote conservation of sensitive species and habitats by increasing the area that would fall under the ability of the NPS to work directly to promote conservation of species and habitats through its own management policies. NPS management policies promote treating species identified or proposed for listing the same. As a result, although direct protection efforts could be small, indirect beneficial effects would be expanded.

Conclusion

Existing threats and ongoing adverse effects to sensitive species and habitats would continue; however, it is likely that because of the importance of sensitive species and habitat conservation, all of the alternatives could contribute beneficial effects, especially, because SMMC would continue to have the ability to protect important resource areas in the legislated portions of the Rim of the Valley study area under alternatives A and B. In alternatives C and D, the NPS would also have this authority if a potential boundary expansion occurred. As a result, there would be mandates from more than one agency to protect sensitive species and habitats, likely resulting in long-term beneficial effects from targeted actions to protect these species.

Archeological and Ethnographic Resources (Traditional Use) Environmental Consequences

Context

Human occupation of the study area dates to almost 10,000 years. Archeological deposits that depict this occupation occur in mountain passes, at the mouths of rivers and creeks, and along the seashore where there was an abundance of food. The study area contains more than 1,700 documented archeological sites, some of which have been listed in the National Register of Historic Places for their significance. Upon evaluation, the Saddle Rock Ranch rock art site, a privately owned resource, has been determined eligible for national historic landmark designation by the Secretary of the Interior.

Impacts from Alternative A

Lands within the study area lie within the traditional territories of the Chumash, the Tongva/Gabrielino, the Serrano, and the Tatavium. The opportunity to better understand these cultures, including contemporary descendants, would continue to provide a range of beneficial effects.

As described in the significance section, the more than 1,000 prehistoric sites documented in the Santa Monica Mountains represent one of the highest densities of archeological resources for a mountain range in the world. Opportunities to continue study and documentation of these resources would have ongoing long-term beneficial effects.

There would also continue to be long-term beneficial effects from additional scientific documentation and understanding of archeological sites related to the Tongva/Gabrielino cultures and their relationship to the Santa Monica Mountains. Known sites within SMMNRA include spectacular Chumash pictographs, village sites representing over 3,000 years of human use, and the only known site where a Clovis point has reportedly been found on the west coast (Stickel 2006). The Angeles National Forest and San Gabriel Mountains National Monument also contains many documented sites. The 7,800-acre Aliso-Arrastre special interest area located in the Santa Clara-Mojave River Districts also includes numerous prehistoric sites. The concentration of stone circles, many of which have been interpreted as house rings, storage caches, and religious sites, may be unique in southern California (USFS 2005).

Outside SMMNRA, the Simi Hills, Conejo Mountain, Santa Susana Mountains, and San Gabriel Mountains contain approximately 700 additional documented sites, approximately 200 of which are located in the Angeles National Forest and San Gabriel Mountains National Monument. Where these sites are located on public lands, they would continue to be protected and investigation could lead to better understanding of their importance. Those located on private lands would also likely continue to be investigated and understood, however, there would likely continue to be less intensive survey work and research associated with them. For instance, only a small portion of the areas outside SMMNRA in the Simi Hills have been surveyed. Similarly, although it is likely that surveys of the Santa Susana Mountains would yield additional sites, very few sites in this area have been documented. For example, recent surveys of the new Santa Susana Pass State Historic Park nearly tripled the number of known sites.

There would continue to be a range of beneficial effects from traditional use activities. Traditional activities currently occur in SMMNRA at sites such as Satwiwa at Rancho Sierra Vista. These activities include tule gathering and events that attract Native American Indians living in the Los Angeles area, an area which contains one of the largest Native American Indian population in the world, representing virtually every tribe. Al-

though the area is principally related to the Chumash, the tribe has embraced Satwiwa at Rancho Sierra Vista as a gathering place for other tribes and tribal members and the park continues to offer a variety of opportunities for tribal members to discuss and demonstrate their heritage.

Traditional activities also occur in the San Gabriel Mountains, including at the Haramokngna American Indian Cultural Center in the study area. Operated by Pukúu Cultural Community Services, a native non-profit organization, the purpose of the cultural center is to share Native American history, heritage, and culture of the five regional tribes of the Angeles National Forest and San Gabriel Mountains National Monument. The site includes a visitor center, museum and art gallery. Those tribes include the Tongva, the Chumash, the Tataviam, and the Serrano. Programs include festivals and exhibitions.

Impacts from Alternative B

The Rim of the Valley Corridor includes lands associated with Tongva/Gabrielino, Chumash, Tataviam (northern Simi Hills, Santa Susana Mountains toward Newhall and west toward Piru, including Castaic reservoir and upper reaches of Santa Clara River, including Vasquez Rocks), and Serrano (primarily associated with San Bernardino Mountains and Mojave desert but is also described as extending east from the San Bernardino Mountains into the Mojave Desert and north in the San Gabriel Mountains through the Sierra Pelona to the Tehachapi Mountains) tribes. Lands associated with the San Fernando Mission, San Buenaventura Mission and San Gabriel Mission, where members of these native tribes were gathered, are also included within the study area. As a result, there are archeological and ethnographic sites associated with all of these peoples in the study area.

Partnership opportunities in alternative B could lead to additional survey of and protection for archeological sites in areas beyond SMMNRA where agency and organization goals coincided. This could lead to better understanding of identified transition zones between the ethnographic territories of Chumash, the Tongva/Gabrielino, and Tataviam such as has been identified for the Santa Susana Pass area. Agencies and organizations managing land in the partnership area could work together to better understand the resources in the Rim of the Valley areas. As additional connector portions of the Rim of the Valley Trail were constructed, archeological surveys would likely document additional sites, since many of the prehistoric sites in the area are along ridgelines (valley living arose with the advent of agriculture and irrigation).

Partnerships could also offer the ability to conduct more coordinated studies, especially to better understand areas within the San Fernando Valley, where three different cultural groups overlapped. For example, with additional protection of the Burro Flats area, there could also be more opportunities to study the overlap of pre-contact Fernandeno and Tongva groups. Some of this overlap is attributed to Tatavium and Tongva that were associated with the San Fernando Mission. Fernandeño is a term used to describe these people, just as Gabrielino is a term to describe Tongva associated with the San Gabriel Mission.

Impacts from Alternative C

Impacts would be similar to alternative B. In addition, there would be long-term beneficial effects from NPS designation, including comprehensive research and documentation of sites and facilitation of development of a network of cultural resources stakeholders that would explore and make recommendations related to cultural resources protection and interpretation on NPS- or partner-managed lands. The collaborative land protection program could also include strategic land acquisition to protect key resources.

Because the area encompassed by alternative C would include the eastern portion of the Santa Susana Mountains, including the connections in the Simi Hills to the Santa Monica Mountains, there could be additional opportunities to protect archeological resources sites in the Santa Susana Pass area that transition between the Chumash and Tongva/Gabrielino as well as the Tataviam. For instance, Burro Flats (Chumash and Tongva/Gabrielino) and the Tujunga village site (Hansen Dam—Serrano) would be within the boundary.

Impacts from Alternative D

Impacts would be similar to alternative C, however, there would be more opportunities to protect additional significant archeological resources because additional areas would be included within the boundary and/or partnership areas. For instance, Conejo Mountain, which contains additional archeological sites and the Soledad basin area containing habitation, processing and production sites in the easternmost portion of the study area would also be included in the national recreation area. As a result, there would be opportunities for additional survey in these areas.

Cumulative Impacts

Archeological resources in SMMNRA and surrounding areas have likely been adversely impacted to varying degrees from past construction-related disturbance (prior to the advent of archeological resources protection laws), from visitor use, vandalism, erosion, and from other natural processes. It is likely that actions—including the development of some facilities and use of park areas prior to purchase by NPS or other or state agencies responsible for protecting archeological resources—resulted in disturbance to or inadvertent damage of archeological resources prior to SMMNRA establishment. Because mitigation measures would continue to be employed to minimize impacts to potentially unidentified cultural resources in proposed and future projects on NPS-managed lands in SMMNRA, there would be increased protection for archeological resources from potential future adverse impacts.

There have likely been and would continue to be negligible to moderate adverse impacts on archeological resources on private lands within the study area. Most of these actions would likely continue to be unintentional; however intentional vandalism, such as collecting artifacts, could also occur and has been documented in the areas encompassed by the alternatives.

Past and present actions that could affect archeological resources include ongoing use of public lands for recreation, study and documentation of resources. A potential for inadvertent moderate to major adverse effects could occur with implementation of the Santa Susana Field Lab remediation, because of limited documentation of a proposed archeological district if the extent of the district is not fully identified prior to testing and removing contaminated soils.

When the impacts of alternative A-D are added to the impacts of past, present and proposed future actions, they would contribute negligible to minor adverse and long-term beneficial impacts on archeological resources.

Conclusion

There would be ongoing beneficial effects from opportunities to study and document the more than 1,000 archeological sites within SMMNRA boundary. Opportunities to study the more than 550 additional sites in the Rim of the Valley corridor would be dependent on the initiative of existing landowners, such as SMMC. Where these exist in the Angeles National Forest and San Gabriel Mountains National Monument, there would be ongoing research and documentation similar to SMMNRA. Periodic surveys of new public lands or areas proposed for development could increase the number of known sites. A range of beneficial effects would also occur from traditional use activities in SMMNRA and Angeles National Forest and San Gabriel Mountains National Monument. In alternative B, partnership opportunities in alternative B could lead to additional survey of and protection for archeological sites in areas beyond SMMNRA where agency and organization goals coincided. This could lead to better understanding of identified transition zones between ethnographic territories. Agencies and organizations managing land in the partnership area could work together to better understand the resources in the Rim of the Valley areas. In alternative C, additional long-term beneficial effects from the potential boundary expansion could include comprehensive research and documentation of sites in the area and creation of a network of stakeholders to recommend sites for protection. Protecting lands related to the transition between the Chumash and Tongva/Gabrielino and new sites related to the Serrano could improve understanding of archeological resources. Impacts in alternative D would be similar to alternative C, however, there would be more opportunities to protect additional significant archeological resources because additional areas would be included within the boundary and/or partnership areas.

Historic Structures/Cultural Landscapes Environmental Consequences

Impacts from Alternative A

In the no action alternative federal, state, and local agencies would continue to preserve and manage historic resources throughout the study area. Hundreds of sites have been listed in local, state, or national historic registries. As described in *Chapter 2: Resource Description*, over 50 sites have been listed in the National Register of Historic Places, while many more appear eligible through survey or evaluation. Another five sites have been designated as national historic landmarks (NHLs), with two others determined eligible (Mount Wilson Observatory and Saddle Rock Ranch Pictograph Site).

Depending on the mandates of area federal, state and local agencies and organizations in the study area, it is likely that many of the cultural resources that have survived up to this point would continue to be protected, albeit to various degrees, depending on agency and organization missions and expertise in cultural resources preservation. Various agencies and organizations would continue to identify and document historic resources. For example, the City of Los Angeles is in the midst of a comprehensive survey of the City's historic sites and resources. Federal and state organizations that have cultural resources within the study area in their care would likely continue to take ongoing actions to manage and preserve these. Such management and preservation could include technical assistance, including the potential for funding, from NPS cultural resources preservation programs. This could come from programs, such as the NHL program, if the significance warranted and if owners/managers determined their eligibility for programs such as this on their own.

SMMNRA would continue to document and preserve historic structures and cultural landscapes within the park boundary, a long-term beneficial effect. Within SMMNRA, there are more than 29 cultural landscapes on NPS lands alone that are listed, eligible or potentially eligible for listing in the national register. An unknown number of similar sites are located on other SMMNRA parklands. Outside the park boundary in the study area, a variety of agencies and organizations maintain and preserve a range of significant cultural resources related to development of the region. As described in *Chapter 3: New National Park Unit Criteria Analysis*, the study area contains resources related to every major prehistoric and historic theme associated with human interaction and development of the U.S. Where these resources were maintained in compliance with the Secretary of the Interior's standards for rehabilitation and preservation, there would continue to be long-term beneficial effects.

The NPS regional or SMMNRA offices could provide technical assistance to some agencies and organizations in alternative A, however without a mandate for doing this in the study area,

this assistance would be provided on a case-by-case basis upon being contacted by the landowner/manager.

Where state lands and managers are involved, preservation of resources could be more likely. Documentation and preservation, however, could be limited by funding and resources and occur on a case-by-case basis. This could result in deterioration of resources as managers await funding or priority-setting management actions. Ongoing preservation projects, however, such as rehabilitation work at Los Encinos State Historic Park and other state park lands would continue and would have long-term beneficial effects on cultural resources. On private lands, cultural resources would continue to be protected at the discretion of the landowner, and some inadvertent adverse effects from misguided rehabilitation could also occur, depending on the level of historic expertise / consultation prior to taking actions.

Impacts from Alternative B

Actions and impacts would be similar to alternative A, however, in alternative B, the NPS would have broader authority to work with partners beyond SMMNRA. NPS technical assistance could support the planning stages of rehabilitation efforts and could be more proactive, but this assistance would still be upon request by the landowner/manager. There would be a potential for more protection for cultural resources that reflect everything from the early hunters and gatherers, to Native American Indian cultures, the Spanish mission and rancho periods, the American homestead era, and Post World War II modernization and settlement. There would also be more opportunities to relate these study area resources to those currently protected in SMMNRA.

In addition, based on the proposed cooperative conservation plan, partner agencies and organizations could explore and make recommendations related to the cultural resources most important to preserve in the study area. By doing so, more resources could be directed toward preserving these and there could be long-term beneficial effects on those resources as a result of this targeted analysis. Provisions could also be made for research and inventories to document and identify cultural resources.

More analysis could also result in new theme studies related to existing resources in the area, which could result in more nominations of significant resources for listing in the national register and/or more national historic landmarks being designated. The plan could also catalyze nearby communities to focus on their local significant cultural resources which could result in more protection of these resources, an indirect beneficial effect. If additional protection or interest in preserving significant cultural resources occurred this could improve cultural resources preservation locally and/or within the study area as a whole, depending on the level of interest generated.

The plan could also be an opportunity for colleges and universities near and far to direct the interest of graduate students looking for research projects, a long-term beneficial effect. There could be opportunities to study a wide range of human interest and significant events important to the development of the oil industry (development of Union/Standard Oil in Newhall, Santa Clarita and Santa Paula), the aerospace industry (Boeing, Rocketdyne and NASA's Jet Propulsion Laboratory in Simi Valley/Chatsworth and Pasadena), the film industry (numerous film settings and studios), archeological and ethnographic information about the Chumash, Tatavium, Tongva/Gabrielino, and Serrano as well as stories of the first African American woman to own land in California (Biddie Mason), and even more modern development associated with the development of conservation biology and firefighting techniques (as these relate to the study area). This history also encompasses the Spanish and Mexican influences in California and the mission period and a Japanese-American confinement site (Tuna Canyon in the Verdugo Mountains). Finally, there could be opportunities to study the water development (importation into the Los Angeles area) from the Colorado River, the Owen's Valley and beyond that was an important catalyst in the region's development.

Impacts from Alternative C

Potential impacts would be the same as in alternative B except that some of the significant resources would be within the proposed boundary adjustment for SMMNRA.

Additional cultural resources within the boundary expansion area would include those related to the space program and the Cold War, located in the Simi Hills and the Arroyo Seco corridor, respectively. Also included would be significant historical sites that reflect the settlement and economic development of the region. This includes the Pico Well No.4 National Historic Landmark, portions of the Butterfield Overland Trail, the Arroyo Seco Parkway, Route 66, and the El Pueblo de Los Angeles Historical Monument. The Simi Hills and Santa Susana Mountains contain numerous archeological sites, including rock art examples not found in the Santa Monica Mountains. Many sites of architectural significance would be within the boundary adjustment, including the Gamble House National Historic Landmark in Pasadena. Although many cultural resources are protected to some degree, additional beneficial effects would be expected from NPS contributions to cultural resources protection. For example, the NPS could conduct studies, inventories, provide technical assistance and incorporate site significance into NPS interpretive and educational programs. The NPS would also facilitate the development of a network of cultural resources stakeholders including historical societies, institutions, and other organizations. This network would explore and make recommendations related to cultural resources protection and interpretation.

The NPS could also collaborate and partner with related historical sites outside of the proposed boundary adjustment such as Mission San Fernando Rey de España in the San Fernando Valley and Rancho Camulos National Historic Landmark in Piru, California.

Impacts from Alternative D

Potential impacts would be similar to alternative C, with additional areas potentially included within a SMMNRA boundary adjustment. Among these would be sites around the Conejo Valley, near Camarillo and in the central and western portions of the Santa Susana Mountains. As in alternatives B and C, public and private agencies and organizations would continue to manage their resources but could receive additional preservation help, beyond technical assistance for their preservation, by working with the NPS.

Cumulative Impacts

The Los Angeles and Ventura county areas encompassed by the alternatives contain a great number of national, regional and locally important cultural resources that have been preserved by a variety of public agencies and private organizations and foundations. Continued preservation of these important cultural resources would have ongoing beneficial effects in the study area. In addition, ongoing research and preservation of significant cultural resources would continue in SMMNRA and would continue to contribute to better understanding of a wide range of nationally important industries and endeavors, including those associated with movie-making, oil production, history and settlement patterns in the area, architecture and other important aspects of American life represented in the study area and within SMMNRA. Both the breadth of resources and the significance of resources in the study area are outstanding.

Past human development and use of the area has resulted in incremental loss of historic structures and cultural landscapes in the study area. Impacts have included changes that occurred as areas within the study area boundary were developed or redeveloped. In many cases, formal historic recognition has led to preservation of resources, such as Pico Well No. 4 in the Santa Susana Mountains and the Corriganville studios area in the Simi Hills. Numerous sites have been identified and preserved as state parks, including Placerita Canyon State Park and Los Encinos and Santa Susana Pass state historic parks. The U.S. Forest Service has a heritage resource program that documents and protects cultural resources on the Angeles National Forest and San Gabriel Mountains National Monument. Approximately 5% of the lands in the U.S. Forest Service managed areas have been surveyed for cultural resources and several sites within the study area have been determined eligible for listing in the National Register of Historic Places.

Past projects also include those related to SMMNRA, including the boundary adjustment that added the Simi Hills to the park. Combined, past projects have primarily resulted in a range of beneficial and adverse effects (such as from loss of associated resources before existing sites were protected).

Current projects include efforts to acknowledge the significance of the Santa Susana Field Laboratory through the environmental impact statement on the disposition of that site, rehabilitation work at Los Encinos State Historic Park and at Mentryville, as well as a host of other preservation maintenance projects being undertaken to preserve the integrity of historic structures and cultural landscapes within the study area. Potential adverse effects on Santa Susana Field Lab historic resources could occur if contamination in the Coca test stands warrants removal of these as proposed in the FEIS and Record of Decision.

Alternative A would continue to contribute minor to moderate beneficial effects from preservation of historic resources in SMMNRA, and from actions by a variety of other public agencies and private organizations related to study area historic resources outside of SMMNRA. Ongoing minor to moderate adverse effects would continue as a result of actions that adversely affect cultural resources preservation in the study area, such as uninformed or misguided rehabilitation of historic structures and/or deterioration caused by neglect or benign neglect. Alternative B would enhance the efforts of public and private agencies and organizations in SMMNRA and beyond through improved partnership coordination among cultural resources organizations working to preserve resources in the study area. It would also improve access to NPS technical assistance for cultural resources preservation. Therefore, cumulative beneficial effects in alternative B would be greater than in alternative A and adverse effects similar to alternative A but slightly improved if there was targeted cooperative conservation planning by public and private agencies and organizations for cultural resources. Alternatives C and D would further enhance the ability to preserve significant cultural resources through targeted land acquisition and through improved access to NPS preservation programs contributing to greater cumulative beneficial effects.

Conclusion

Alternatives A-D would have a range of beneficial and adverse effects, depending on the resource, its location and the land manager/owner and their own or access to expertise in historic/cultural resources. Effects could range from minor to moderate and could affect the integrity of the historic structure or cultural landscape. Beneficial effects could also occur if additional sites were identified/preserved. Impacts under alternatives B-D would be more likely to have long-term beneficial effects because of improved knowledge and access to NPS cultural resources staff and because these alternatives would include development of cultural resources protection plans that would identify the character-defining features of the historic structure and/or cultural landscape and identify the means to protect and/or to undertake preservation actions for these.

Visitor Experience Environmental Consequences

Impacts of Alternative A

Access and Transportation

The Los Angeles International (LAX) and Burbank/Bob Hope airports provide visitors from outside the area access to the region, however most visitors to SMMNRA area are from the local area and/or from the region. The SMMNRA *General Management Plan* (NPS 2002) calls for more information to be provided at LAX for visitors from outside the area. This could result in more visitors with a better understanding of this urban national park. Recent surveys, however, still show most visitors surprised to find a national park near Los Angeles (Designory 2011 in NPS 2012c). The park is also quite confusing with not a handful of entrances, but rather hundreds of entrances and only a few highway and entrance signs. Most visitors and even some nearby residents therefore generally do not know they are within SMMNRA or a national park.

Most access to SMMNRA would be via private vehicle on roads that would continue to provide for access and egress to public parklands as well as to private lands and residences within the boundary. These roads within SMMNRA would also continue to link to those outside the boundary. Most roads within the SMMNRA boundary are managed by cities or counties; however, there are also state routes, such as State Route 1 and State Route 23 within the boundary. Major highways (e.g. U.S. Highway 101, Interstate 405) provide access to secondary state and county roads. Many of these roads are used not only for access in SMMNRA, but also for commuting, especially Topanga Canyon Road (State Route 27), Mulholland Highway, Las Virgenes Canyon Road and Kanan-Dume Road. There are also a few NPS, State Park and SMMC roads providing local access to and within public parklands.

Because public transportation in SMMNRA remains limited, there would continue to be moderate to major adverse effects on providing access to the park for those without vehicles. Not all communities have good access to parklands in the study area. There are currently two public transportation corridors near SMMNRA, one on Pacific Coast Highway (State Route 1) and one along U.S. Highway 101. In the past, SMMNRA received a transportation grant to provide bus travel within the Santa Monica Mountains (ParkLINK Shuttle). The system was a network of five buses (four for operations) used on three routes in SMMNRA which lasted from July 2005 through November 2007 and ran weekends only (with some holidays) from 8:00 a.m. to sunset. It was funded by MRCA and Category Three ATPPL (Alternative Transportation In Parks and Public Lands Program).

Although somewhat successful, the program was not well-advertised and thus ridership was below expectations carrying approximately 80 people per day rather than the 100 people per day anticipated (MacKechnie 2013). The link to weekend Los Angeles Metro service also did not occur until late July 2007 also contributed to low ridership, shortly before the shuttle was discontinued due to funding shortfalls. This lack of connectivity between public transit systems also resulted in low ridership.

Within the study area outside SMMNRA, there are numerous other major highways (e.g. Interstate 5, Interstate 210, State Route 118), major roads (State Route 110 and 126) and a high density of county and city managed roadways. In the urban areas near the study area are numerous city bus routes. Some of these areas, such as the eastern end of Simi Valley are also serviced by the regional Metrolink railway. A few of these routes provide close access to public parklands in the study area.

Public transportation within the study area to public parklands is also somewhat limited, but is more extensive in some areas than is available for access to SMMNRA parklands. For instance, there is public bus service from Chatsworth to Griffith Park in summer for concerts and events at the Hollywood Bowl which is accessed from the Chatsworth Train Station parking area. The Orange Line (Metropolitan Transit Authority) also connects to Metrolink and Amtrak. The MTA Bus Route 534 takes visitors from Los Angeles (Fairfax/Washington) to park sites along the Pacific Coast Highway (Highway 1) in Malibu. The MTA Bus Route 302 takes visitors from downtown Los Angeles to Pacific Palisades via Sunset Blvd. Santa Monica's Big Blue Bus connects LAX with park sites in Santa Monica and Pacific Palisades.

Amtrak generally provides service twice a day in or near the Rim of the Valley with stops at the following stations: Burbank Airport, Camarillo, Chatsworth, Los Angeles Union Station-LAX, Moorpark, Oxnard, Simi Valley and Van Nuys. The rail timetable, however, may or may not coincide with the ability to visit parklands during optimal times. For instance, a cursory search for a round-trip between Camarillo and Chatsworth turned up a fare of $15.00 and travel times of 3:00 and 8:00 p.m. The commuter rail system MetroLINK currently operates Monday through Friday between Union Station and Chatsworth and Simi Valley.

The Simi Valley Amtrak station is located at the eastern end of Simi Valley and is within walking distance to Rocky Peak Park and Corriganville. Similarly, the Chatsworth station could provide access to areas within the study area in that vicinity. Both train stations can be accessed from areas, such as Camarillo on the west and Los Angeles on the east.

Where carpools can be arranged, there are numerous park and ride locations that provide relatively close access to parklands, such as the park and ride at Elysian Park that can be used to access Dodger Stadium.

Visitor Use Opportunities

There would continue to be long-term beneficial and adverse effects from providing visitors a wide range of visitor use opportunities in SMMNRA, including hiking, horseback riding, bicycling, camping, birdwatching, picnicking, driving for pleasure, viewing scenery, beachcombing, attending educational and interpretive programs and special events and others. Effects would vary depending on individual visitors and their preference for these activities. Visitor use opportunities can be experiential, cognitive, emotional and behavioral. In other words, visitors do things, learn things, feel things and exhibit actions or are inspired to behave a certain way. Nearly 18 million people live within close proximity to SMMNRA and visitation is estimated at 33 million visitors per year, although recorded visitation to NPS sites alone is under one million (NPS 2012c).

SMMNRA visitors come from a variety of places. There are educational and cultural institution groups, people coming to engage in specific recreational activities (hiking, climbing, etc.), and the general public. Visitors also include commercial users, such as people on retreats, or engaging in paid commercial services tourism (bus tours, horseback riding, kayaking and other recreational activities), realtors, film industry personnel on shoots, etc. There are also cultural heritage tourists, who are interested in historic and house tours, museums or craft fairs and other similar venues.

These visitor use opportunities would also continue to be available to a wide array of visitors at sites throughout SMMNRA and in the Rim of the Valley Corridor study area on public and private parklands. Visitor use opportunities would also have a range of social experiences, from the solitude available in more remote areas on weekdays, to the highly social special events held at Paramount Ranch during the height of summer. These opportunities would also continue to be both beneficial and adverse, depending on the type of visitor and whether they preferred social or solitary experiences and where they decided to go.

There would also continue to be a full range of volunteer visitor use opportunities, including the well-established Mountain Bike Unit and Mounted Volunteer Patrol. Over 8,000 volunteers contributed nearly 90,000 hours in 2011 (NPS 2012c).

Visitors would also have the opportunity to have experiences enhanced by media, such as at the Gillette Ranch visitor center or during educational or evening programs, or to have media free experiences on hiking trails and during other interpretive programs. Both within and outside SMMNRA, there would continue to be a variety of other structured public recreational opportunities, including guided horseback riding, fishing, golfing and formal camps, though some of these would occur primarily on private and local parklands. There would also continue to be a wide range of opportunities to learn about different resources, places, and facilities in SMMNRA and beyond (see next section on Interpretation and Education).

Broader experiences that would continue to be available in areas primarily outside SMMNRA include boating, public swimming pools and other structured recreational activities, such as those at Hansen Dam and Sepulveda basin.

Because most public lands within the study area would continue to be located in SMMNRA or the U.S. Forest Service managed areas, most visitors would likely congregate at these sites, however, existing very popular parklands, such as Griffith and Elysian parks, Towsley Canyon, sites along the Los Angeles River and others would likely continue to appeal to people who lived closer to them or who were seeking new experiences in parklands. As a result visitors would continue to disperse across both SMMNRA and the Rim of the Valley Corridor study area mostly on weekends, but at all times, where public parklands have been preserved. This dispersal would continue to occur in alternative A, even in the absence of the broader area being designated. This would occur both because these parklands already exist and because the SMMC has promoted them through publications such as *Outdoors* and on their website and also because of the recreational purposes of the Angeles National Forest and San Gabriel Mountains National Monument (the most visited national forest in the U.S.). Other areas, such as the several state parks in the study area would also continue to receive visitors unfamiliar with the proposed broader Rim of the Valley plan being implemented by SMMC through its ability to protect land in the Rim of the Valley corridor. In addition, the myriad of small historic sites listed in the National Register of Historic Places and/or in other registries and scattered throughout the study area would continue to attract visitors from near and far interested in the wide range of sites.

Interpretation, Education and Partnerships (Sites and Facilities)

There would continue to be long-term beneficial effects from NPS, CSP and MRCA visitor facilities and contact stations where interpretative and educational programs are conducted. NPS interpretive programs in SMMNRA are conducted from a variety of sites and facilities, including the primary visitor center at King Gillette Ranch, the Satwiwa Native American Indian Culture Center, small or portable visitor contact stations (Circle X, Cheeseboro, and Paramount Ranch) and a roving van. CSP also has visitor contact stations at Leo Carrillo, Sycamore Canyon, Malibu Creek, Topanga, Trippet Ranch, Will Rogers, and Malibu Lagoon. MRCA has visitor contact stations at Franklin Canyon and Temescal. There is another visitor contact station at Charmlee, operated by the City of Malibu.

Outside SMMNRA there are a wide variety of other existing nature centers and interpretive facilities, as well as historic sites and museums run by a stunning array of local, regional,

and state agencies and organizations. Some of these include the Santa Susana Pass State Historic Park and Rio de Los Angeles State Historic Park (CSP); Mentryville (SMMC); William S. Hart Park Museum (Natural History Museum of Los Angeles County); Eaton Canyon Nature Center, Placerita Canyon Nature Center and Vasquez Rocks Natural Area (County of Los Angeles); Stough Canyon Nature Center (City of Burbank), Chatsworth Nature Preserve (Los Angeles Department of Water and Power), and numerous cultural sites listed in the National Register of Historic Places. These would continue to provide a wide range of visitor facilities and experiences offering beneficial effects through interpretive and educational opportunities for visitors to the study area.

Programming

There would continue to be short- and long-term beneficial effects on visitor experience from interpretive and educational programming. Interpretation helps visitors do meaningful activities, learn key messages about the site, feel an emotional connection to places, and learn park etiquette, and ideally be changed because of, visiting park sites. Well-designed interpretive programs provide all visitors, regardless of age, interests, background, or ability, opportunities for meaningful, enriching experiences as they engage with park resources, staff and enjoy parks (NPS 2012c).

In 2011, the NPS made approximately 208,346 direct visitor contacts through interpretive and education programs. These programs provided by interpreters included formal/guided talks, walks, demonstrations, performing arts, special events, educational programs, outreach services, community programs and programs facilitated by NPS materials. Other agencies conducting programs in SMMNRA also made an unknown additional number of contacts through programs. In addition to NPS interpreters and a wide array of volunteers conducting programs for the NPS, these agencies contribute numerous additional permanent and seasonal staff as well as additional volunteers in offering public programming across the mountains. NPS also offers annual interpretive training for agency and partner organizations and volunteers that helps to increase the understanding of the NPS goals and objectives for interpretation throughout SMMNRA and to increase consistency of programming in the Santa Monica Mountains.

This wide range of programming in SMMNRA is published quarterly in *Outdoors*, which has a physical distribution of 15,000 copies, including 10,000 regularly mailed, and which is also published online. Dozens of programs are offered each week, covering an amazing array of topics related to natural history, cultural history, environmental education, and recreational skills. These programs are offered by the NPS, CSP, MRCA, and other partners. Programs offered by CSP include an array of interpretive services: interpretive tours, and educational, summer community group and seasonal campground programs as well as an annual whale festival (NPS 2012c). MRCA programs include curriculum-based environmental education, after-school programs for at-risk youth, programs for seniors, families and small children; transportation programs for groups and organizations to visit public open space, and training programs for individuals and other park professionals.

Outside SMMNRA, in other established park areas within the Rim of the Valley study area, an unknown variety and number of additional public interpretive and educational programs are offered in a wide array of areas. As with the programming in SMMNRA, it is likely that these programs would continue to be offered, providing long-term beneficial effects for visitors to the wide array of sites. Because, however, they are offered by such a wide range of public and private agencies and organizations, there would continue to be little coordination, although common goals likely exist for those offered by individual agencies, such as CSP and SMMC/MRCA.

In SMMNRA, public interpretive, education and outreach programs are structured around four broad interpretive themes related to open space and recreation, human use/cultures, Mediterranean Ecosystem, and providing a gateway to the national park system. More specific subthemes identify specific topics that relate to these broader themes. The existing themes and the subthemes offer many opportunities for structuring public programs that further the mission of the NPS and SMMNRA, a long-term beneficial effect for interpretive and educational visitor experience opportunities.

Although the NPS partners with a variety of other public and private agencies and organizations in SMMNRA, there is no unified thematic framework for public interpretive, educational and outreach programs provided by these agencies and organizations within SMMNRA. As a result, there continues to be a lack of name recognition and little understanding of SMMNRA as a whole and its association with the NPS for many nearby urban and suburban communities and to some extent even for those who live within SMMNRA boundary itself (NPS 2012c).

Although NPS programs in SMMNRA are guided by an interpretive framework of themes, there are no unifying themes currently used for public interpretive, educational and outreach programming in the other portions of the study area.

To the extent that this trend continues, there would be ongoing minor to moderate adverse effects on visitor education and interpretation in SMMNRA from not meeting goals associated with one of the major interpretive themes -- namely to help visitors understand the relationship between the NPS and SMMNRA and the connection to other national parks.

Outreach

SMMNRA counts among its objectives a desire to connect the park, its resources, and its mission with urban audiences in

the Los Angeles area. Toward this end, the park now operates a space in El Pueblo de Los Angeles Historical Monument in downtown Los Angeles to serve as a base of operations within the City of Los Angeles. This is one of the sites within the study area. At this site, SMMNRA cooperates with CSP and the City of Los Angeles to reach additional audiences. Another outreach program is directed at students enrolled in the Los Angeles Unified and Oxnard Union school districts to encourage high school students to pursue careers with the NPS. The program includes educational and work experience opportunities in SMMNRA. Combined, these programs would continue to have long-term beneficial effects on reaching underrepresented visitors to SMMNRA and other national parks and would continue to extend the benefits of SMMNRA outside the physical boundary of the park within the study area.

Education

SMMNRA education programs offer broad and far-reaching programming for youth and adults of all ages, from the K-12 programs on biodiversity and national parks as laboratories to programs on wildland fire ecology and restoration activities for teens. SMMNRA is also used by area science and other magnet schools as a learning center. In addition, the park conducts teacher workshops, offers a teacher-ranger-teacher program (to allow teachers to serve as interpreters in the park and then to convey their experience back to the classroom), as well as hosting one of 17 national research learning centers to encourage college students to do research in national parks.

Within SMMNRA, there are a variety of public programs for children and adults offered by NPS, California State Parks, Mountains Recreation and Conservation Authority, Mountains Restoration Trust, the Resource Conservation District of the Santa Monica Mountains, NatureBridge and others. Beyond SMMNRA, an unknown number of public and private agencies and organizations offer interpretive and educational programs to youth and adults providing a range of beneficial effects on visitor experience in the study area. Scanning the range of nature centers and public parkland visitor centers currently established in the study area as shown in the *Outdoors in Los Angeles* map gives only a hint of the additional range of interpretive and educational programming that might be going on in the study area. Among these include Wildwood Park, Lang Ranch, Placerita Canyon Nature Center, Hansen Dam Recreation Area, Stough Canyon Nature Center, Griffith Park Visitor Center, Rio de Los Angeles State Park, etc.

Media

Interpretative exhibits in SMMNRA also include a wide array of indoor and outdoor exhibits, including trailhead signs, bulletin boards and self-guided nature trails. To the extent that these are similar in construction and design they contribute broadly toward improving understanding of SMMNRA and its resources, a long-term beneficial effect. Because, however, there is also a large number of independent partner agencies and organizations, there are also numerous other sign sets and styles across the mountains. Although these also contribute to visitor information and interpretation, the lack of a unifying system, including for site entrance and place name signs, continues to contribute to both beneficial effects for visitor interpretation and education and adverse effects in visitor use and understanding of the partnership national park that is SMMNRA. Similarly there is a dazzling array of site bulletins, flyers and other publications about resources in SMMNRA put forth by the array of partner agencies and organizations that have the same types of beneficial and adverse effects on understanding SMMNRA as a whole.

Within the wider array of nature centers, additional state, county and local parks and independent open space areas and other visitor sites in the study area are numerous public agencies and organizations that provide a range of media, maps and site signs. These would continue to provide long-term individual beneficial effects on visitor understanding and visitor experience through interpretation and education in and for individual sites, but not for the study area as a whole.

Impacts from Alternative B

Access and Transportation

Impacts would be the same as alternative A. There would be no changes in visitor access routes or commuter patterns in SMMNRA or the Rim of the Valley parklands from development of a cooperative conservation plan. Although the plan could specify opportunities to increase access to public transportation, this would occur on a case-by-case basis, based on the interest of partner agencies and organizations. None of the proposals in this alternative would change regional traffic impacts.

Visitor Use Opportunities

Visitor use opportunities available in alternative B would be the same as in alternative A. Although a cooperative conservation plan developed by public and private agencies and organizations is proposed as part of alternative B, it is unknown to what degree there would be a unified vision associated with recreational uses and other visitor use opportunities in the study area beyond the efforts of the SMMC to continue to protect public parklands in the vicinity of the study area according to their legislative mandate. In this alternative, however, the NPS would seek to coordinate educational messaging, which could provide some unifying themes linking partnership areas, which could in turn encourage visitors to explore similar recreation sites.

Interpretation, Education and Partnerships

Sites, facilities and interpretive, educational and outreach programs and media in SMMNRA would continue to be the same as in alternative A, albeit expanded incrementally over time, and would therefore continue to offer long-term beneficial

effects on visitor experience to the degree that the programs reached visitors to SMMNRA. Cooperation among partners in SMMNRA would continue to extend the benefits of conservation to youth and adults attending programs given by the NPS and its partners. Visitors to SMMNRA would continue to be inspired by the park and its resources. Despite more than 35 years of NPS presence in the Santa Monica Mountains, name recognition of the park is low and would likely initially continue to remain so. Over time as outreach programs matured, there would continue to be better understanding of the park and its mission and partners as well as its relationship to other NPS sites, offering visitors the benefits of interpretation and education related to public land preservation in the Los Angeles and Ventura county metropolitan area. Some of the state parks, including those that have been around for more than 60 years, have much greater name recognition.

Outside SMMNRA in the study area, the cooperative conservation plan could identify interpretive and educational linkages among its disparate parklands and land managers.

For the most part, however, those outside SMMNRA would continue to operate independently and would not be linked by any common boundary, although as more parklands are acquired by SMMC and managed by MRCA, there could begin to be better connections established.

Because some additional parklands in the study area would be included within a partnership area, there could be a range of beneficial effects from extending NPS interpretive program and media expertise and experience to these other park sites through technical expertise and training to other park site staff and volunteers in interpretation and education. In general because these areas would continue to be outside SMMNRA, however, there would continue to be independent visitor programming by a wide range of public and private agencies and organizations that while benefitting local and neighborhood schools and organizations, would not increase visitor understanding of the resources in the greater Los Angeles and Ventura county areas within the study area. These agencies and organizations would continue to be a mostly disjointed range of sites and experiences in alternative B and would not contribute to a broad understanding of resources in the Rim of the Valley study area. Furthering the goals of the cooperative conservation plan would also continue to be voluntary among the wide array of public and private agencies in the study area and therefore may or may not contribute to furthering the goals of the cooperative conservation plan, including public land protection in the study area.

Impacts from Alternative C

Access and Transportation

In addition to impacts from alternative A, the NPS would provide technical assistance to surrounding communities (valleys and urban areas) to enhance access to SMMNRA through trail connections and public transportation options and to increase the diversity of public parklands. With a broader emphasis on connecting people to recreation, providing more close-to-home recreational opportunities for urban communities, and improving transportation to major recreational destinations, alternative C could have beneficial effects on providing access to public lands.

There would be more opportunities for visitors to access sites within the Rim of the Valley area and more opportunities to preserve public parklands in the area encompassed by alternative C. Providing these additional opportunities could disperse visitors from some currently overcrowded areas and could improve traffic conditions in some places. Overall, however, it is likely that because of continued growth and visitors looking for new places to go that this would not be discernible given regional traffic patterns and trends. Generally actions in alternative C would therefore have overall minor adverse and beneficial impacts on transportation, while providing moderate beneficial impacts on visitor access.

Visitor Use Opportunities

Although the same visitor use opportunities as described in alternative A would be available, visitor use opportunities would be expanded in SMMNRA because there would be new parklands included within the boundary. Among these would be a dog park, camping with RV hook-ups, kayaking on the Los Angeles River, boating and public swimming pools at Hansen Dam, golfing, and recreational ballpark opportunities in the Sepulveda basin, several shooting ranges, and a variety of nature centers, movie ranches, historic and cultural sites, state parks, city parks, educational camps and open space preserves. Although there is some concern about overcrowding at some sites during some seasons, many places within SMMNRA often have more capacity in peak seasons, especially inland sites in the summer and coastal sites in the winter.

Interpretation, Education and Partnerships

Impacts from alternative C would be similar to those in alternatives A and B, except that because some additional parklands in the Rim of the Valley Corridor study area (173,000 acres) would be included within the boundary of SMMNRA, a wider range of beneficial effects from extending NPS expertise and experience in interpretive programs and media to these other park sites could ensue. There would also be an even greater number of sites as additional parklands continued to be protected by land management partners in the expanded boundary. Although SMMNRA already offers NPS programs at sites in a few areas encompassed by alternative C, it is likely that more programs and media would be offered if this area was included within the boundary.

Because of an even broader dispersion of sites across a much greater region, however, it is likely that as in alternative A, there

would continue to be problems in identifying the areas, especially those managed by different entities, as part of an NPS unit and in encouraging individual independent partners to identify themselves as part of SMMNRA. Therefore, although the area would become a region of interconnected parks and open spaces, visitor understanding of this and the NPS role in it would likely continue to be less than ideal without concentrated outreach, education and marketing efforts.

Overall, however, there would be an enhanced range of interpretive and educational programs that would target additional urban audiences and underrepresented groups that could enhance the appeal of the NPS and other parklands across the country for these groups and which could result in additional local, regional and national incentive to protect public parklands. If this occurred, the NPS and SMMNRA mission could be conveyed to ever greater numbers of people as recognition of the significance of parklands and their resources increased over time as it has with state parks established since the 1950s.

Impacts from Alternative D

Access and Transportation

Actions and impacts would be similar to alternative C. Although there could be slightly less emphasis in this alternative regarding providing public access to parklands, there would potentially be more opportunities to connect public parklands to urban communities, since more area would be included in this alternative. The range of impacts would likely continue to be minor for transportation requiring private vehicles with minor to moderate improvements in access, depending on the degree to which opportunities for public access were implemented or became available for nearby communities.

Visitor Use Opportunities

Similar to alternative C, although visitor use opportunities would remain the same overall, they would be expanded within the boundary of SMMNRA. Expanded opportunities included within the boundary in alternative D would be similar to those in alternative C. Notably, more open space that could provide for more low impact activities would also be included in the boundary.

Interpretation, Education and Partnerships

Impacts from alternative D would be the same as in alternative C, except that there would be an even greater area (313,000 acres) encompassed by this alternative. In the short term, this could further exacerbate identity problems associated with SMMNRA but would continue to offer the public an even greater and outstanding array of interpretive and educational programs that would ultimately provide beneficial visitor experiences notwithstanding ongoing and initial potential identity problems. Overall, alternative D is likely to provide the greatest range of interpretive and educational programs but would also need additional staffing dedicated to partnerships to achieve this.

Cumulative Impacts

Access and Transportation

With a population of 18 million and growing, documentation of traffic impacts is widespread in the region. The area's population grew by 7% and the number of housing units grew by 4% in the decade from 1990-2000. In the decade from 2000-2010, population also grew by 4 % therefore both population and housing demand are projected to continue to increase (Stoms et al. 2012:142). Predictions in the GMP called for level of service reductions (more traffic/longer waits) on most major roads in SMMNRA through 2015. Although traffic will likely continue to increase on roads within and surrounding SMMNRA and Rim of the Valley study area, this increase would continue to be primarily related to growth in rural, suburban and urban communities in the vicinity of these areas. As a result, the alternatives would contribute negligible cumulative impacts on transportation. Alternatives A and B would also have negligible impacts on access and alternatives C and D would contribute negligible to minor cumulative beneficial impacts on access from dispersal of some visitors to new areas and through exploring opportunities for improved transportation connections to SMMNRA.

Visitor Use Opportunities

Home to more than 18 million people, the greater Los Angeles metropolitan area also hosts an immense number and range of recreational opportunities, including educational, sporting, athletic, museum, music and film entertainment, and interpretive experiences. Population growth trends in the study area and the surrounding region would likely continue to increase pressure on available open space. With more than 33 million visits, the public lands in the study area are among the most heavily visited nationally; therefore recreational opportunities and quality are likely to be reduced over time without additional public land protection. Alternatives A and B would continue to add incrementally to public land protection in the area, while alternatives C and D would do more to alleviate increasing public pressure on lands within the study area by including more area within the boundary of SMMNRA.

The wide array of visitor experiences in SMMNRA and in the broader Rim of the Valley study area would continue. Alternatives A and B would contribute negligible effects by continuing to offer this broad range of visitor use opportunities. Alternatives C and D would contribute minor beneficial effects by providing some of these experiences in areas within SMMNRA and would lend NPS nationally renowned expertise and skill in interpretive media and presentations to enhancing these experiences.

Interpretation, Education and Partnerships

Natural, historical, and cultural sites abound in the greater Los Angeles and Ventura county areas encompassed by the Rim of the Valley study area and also extend beyond this area to en-

compass a veritable buffet of sites that could appeal to most if not all of the more than 18 million people in the region. Those offered in SMMNRA by the NPS and its partners and those in the Rim of the Valley study area are only a small portion of the cultural sites that are available but encompass most of the intact blocks of open space available. Alternative A would continue to contribute cumulative minor to moderate beneficial impacts from interpretation of those sites within SMMNRA and in the study area. Alternative B could enhance this range of beneficial impacts by attempting to encircle a portion of this area with a partnership, optional area of coordination for some of these sites and land managers but would continue to contribute the same range of beneficial effects as in alternative A. Alternatives C and D could potentially contribute moderate beneficial impacts if the area began to be perceived as a seamless system of parks available to urban and suburban residents alike and which appealed to visitors from outside the region. If marketing of the area increased, residents and visitors could begin to understand the significance of the area's resources and this could increase support for protection of additional parklands in the region and in the U.S. by people as diverse as the region itself.

Conclusion

Access and Transportation

Alternatives A and B would have no or negligible beneficial or adverse effects on visitor access and transportation, while alternatives C and D would have negligible to minor adverse and beneficial effects on transportation and minor beneficial effects on visitor access, with the potential for localized moderate beneficial effects primarily in alternative C, where the emphasis would be on providing more close-to-home opportunities for urban communities.

Visitor Use Opportunities

There would continue to be a wide range of visitor use opportunities in alternative A offered both within and outside SMMNRA. Visitors and residents would have the opportunity to participate in both formal and informal recreational activities at an array of sites, with long-term beneficial effects from the diversity of activities offered and from the assortment of groups that manage the sites within the study area boundary. Impacts would be similar in alternative B, except that through the cooperative conservation plan in alternative B, there is a possibility that visitors and residents could better understand the choice of activities available to them. Alternative C would both increase the kind of activities available within the boundary of SMMNRA and would potentially increase public access to and information about them, providing a range of beneficial effects. Similar to other alternatives, visitor use opportunities in alternative D would be broad and far-reaching and would include activities provided by the NPS and its partner agencies within an expanded SMMNRA that would encompass an extended scope of visitor use opportunities.

Interpretation, Education and Partnerships

Alternative A would have continued moderate beneficial and negligible to minor adverse effects on visitor experience from continued limited understanding of the NPS and its role in SMMNRA. There would be no additional beneficial effects associated with management of study area sites except associated with SMMC/MRCA continued acquisition and management of additional parklands. Alternative B would likely slightly improve coordination among land management agencies in the study area and would therefore have some additional negligible beneficial effects from additional interpretation and education on visitor experience, but because entities within the partnership area would remain largely separate and there would likely be no overall coordination in interpretation and education, these benefits would remain slight. Alternatives C and D would have some overall long-term beneficial and adverse effects from including more land within the boundary of SMMNRA, where visitor experience would likely be enhanced by more interpretive and educational programs offered by a wide array of agencies and organizations. Because, however, these alternatives would increase the number of entrances to SMMNRA parklands and because there is already some difficulty in identifying SMMNRA as a NPS unit and in identifying parklands within it as part of SMMNRA, there would continue to be some minor adverse effects on visitor understanding of the area unless extensive marketing occurred. The interpretive, educational and outreach programs themselves would continue to add greatly to visitor understanding of parklands and would likely meet a full range of other objectives in enhancing the visitor experience in these areas. Compared to alternative C, alternative D would expand the area covered by these programs. Due to its smaller size compared to alternative D, Alternative C might focus more on underserved communities and underrepresented groups, and could, in the long-run improve these groups' identity with parklands, contributing to long-term protection of public lands, including national parks.

Park Operations and Partnerships Environmental Consequences

Impacts of Alternative A

There would continue to be widespread and localized beneficial and adverse impacts on park operations related to management of SMMNRA and the study area. Specific operations in national park units vary widely, depending on the amount and type of resources managed, number of visitors, level of programs offered, and many other factors. Together, the National Park Service, California State Parks, Santa Monica Mountains Conservancy, Mountains Recreation and Conservation Authority provide and maintain a wide variety of public park operations in the Santa Monica Mountains. These include administration, maintenance, resource management, interpretation, law enforcement and fire management among others. In addition, park partners beyond SMMC, MRCA and CSP provide additional operations and management of SMMNRA resources.

Among the most active of these include the Resource Conservation District of the Santa Monica Mountains and Mountains Restoration Trust, as well as local governments, such as Malibu. In fact, there are more than 60 different management agencies in SMMNRA. These agencies maintain their own budgets, operations and activities and have varying numbers of employees dedicated to management and administrative activities in SMMNRA.

Similar to other national park units, SMMNRA park operations include a breadth of activities that can seem like the management of a small city. There are public utility systems, buildings, historic and non-historic structures and a variety of administrative, maintenance and law enforcement operations. In addition, there are visitor use management operations, special use permit management and educational and interpretive activities. To conduct these activities, SMMNRA has approximately 80 permanent and varying seasonal staff who work in the approximately 23,350 acres managed by the NPS spread throughout the Santa Monica Mountains.

Like the NPS, the Santa Monica Mountains Conservancy and Mountains Recreation and Conservation Authority are responsible for a variety of park operations on the lands they manage (approximately 18,000 acres in SMMNRA and 18,400 acres in the Rim of the Valley Corridor study area), including activities such as opening and closing gates, administering permits, enforcing rules, dealing with noxious weeds, conducting wildlife surveys and restoration activities and providing for visitor use with restrooms, water, parking and maintaining and creating trails. To do these activities, the SMMC/MRCA have a staff of about 130 who work in SMMNRA and in the Rim of the Valley Corridor parklands.

California State Parks also conduct the same types of activities as the NPS and SMMC/MRCA on the approximately 36,000 acres they administer in SMMNRA and 1,300 acres they administer in the Rim of the Valley Corridor study area.

In addition to the management of most of SMMNRA by the NPS, SMMC/MRCA and CSP, there are a host of other private and public land managers in the Santa Monica Mountains. These agencies and organizations manage lands under their own authorities and mandates. As a result, it can be difficult for visitors (and even residents and neighbors) to understand the complex patchwork of partnership public lands and private lands that make up SMMNRA.

Currently the above agencies and a host of other agencies and organizations provide operations throughout SMMNRA and in the Rim of the Valley Corridor study area. In addition, (as described in SMMNRA *General Management Plan*), through partnerships with a variety of national and local service and youth organizations such as the Sierra Club, Boy Scouts of America and Girl Scouts, Santa Monica Mountains Trails Council, and local colleges, the park is provided with volunteers for special events such as National Trails Day, National Public Lands Day, Keep America Beautiful, the Great American Clean Up, and Earth Day. Other growing volunteer resources derive from providing community service opportunities for high school and college students, as well as the continual growth of the association with the Boy Scouts of America, which has resulted with several Eagle Projects a year benefiting both the scouts and the NPS. SMMNRA has also developed volunteer projects for college students from programs such as AmeriCorps, Student Conservation Association, and Alternative Spring Breaks.

The NPS and other agencies also work with cooperating associations, natural history associations and concessioners in SMMNRA and it is likely that partner agencies in the study area also have a variety of agreements with non-profit and commercial organizations to provide services, such as for maintenance and visitor services.

The arrangement in SMMNRA is so complex that occasionally, even the partner organizations miss identifying their affiliation with each other. For instance, the LAMountains.com website operated by SMMC/MRCA did not show the SMMC/MRCA affiliation with the NPS in SMMNRA except as associated with the visitor center at King Gillette Ranch. As noted in the Long-Range Interpretive Plan:

> *There is no identification of SMMNRA included on LAMountains.com, a well-known resource throughout the region for events in the Santa Monica Mountains. Further, there is no indication that the vast majority of the parks listed on this site are partners with and within the boundaries of SMMNRA. The only SMMNRA reference on the site is alphabetized under A for the existing Anthony C. Beilenson Interagency Center in Thousand Oaks (NPS 2012c).*

Therefore, although the partnerships within SMMNRA are strong, as evidenced by the agreement signed in 2000 among the NPS, CSP and SMMC/MRCA, there are still some key ways that this partnership could be strengthened. It is unlikely, however, that one agency could undertake the breadth or complexity of operations in the public parklands in the study area. Because of the complexity of park operations and partnerships under alternative A within SMMNRA, there would continue to be both minor adverse and long-term beneficial effects. In addition, staff in different public parklands wears different uniforms and their law enforcement officers have different laws to enforce.

Among the confusing aspects for land managers and visitors would continue to be how to demonstrate the connectedness of parklands despite their management by a variety of agencies and organizations. For instance, there is a wide array of signs and interpretive messages on different public parklands within

SMMNRA and beyond in the study area. Another example is the differences related to facilities and information provided in NPS-managed areas in SMMNRA and USFS-managed areas in the San Gabriel Mountains.

Impacts from Alternative B

Impacts would be similar to alternative A, however the cooperative conservation plan could identify specific roles for partner agencies and organizations and messaging provided by the NPS could increase the recognition of public lands within the study area. If this occurred, there would be long-term beneficial effects. Without this kind of role identification process, it would continue to be difficult for visitors and even partners to understand and explain the complex web of management authorities and partnerships in the Rim of the Valley Corridor study area, where agencies and organizations would continue to manage their lands under separate authorities and direction from federal, state and/or local jurisdictions.

Impacts from Alternatives C and D

Impacts would be similar to alternatives A and B. With more land within the boundary of SMMNRA, there would be a need for increased staffing and funding to conduct park operations and an even greater need for partner agencies and organizations to emphasize the cohesiveness of public lands within SMMNRA. As in alternative B, messaging provided by the NPS could assist in this, such as in developing similar sign and publication themes and by publishing information to cooperative websites and in Outdoors in the Santa Monica Mountains.

Broadening the NPS' ability to partner beyond the current SMMNRA authorized boundary would also create new opportunities to leverage resources to protect the area. The NPS could expand its current cooperative management agreement, allowing for new visitor opportunities, scientific research and study, and for coordinated work on wildlife corridors. Agencies that currently cooperate with NPS in SMMNRA manage lands throughout the proposed boundary adjustment areas. Adding these lands to SMMRNA could increase efficient cooperative management approaches that have been applied in the Santa Monica Mountains for over 30 years.

Expanding SMMNRA to include areas of the Rim of the Valley Corridor could also improve understanding of resource conditions and ecosystem stressors. The NPS would have the authority to develop a comprehensive baseline inventory of the natural resources of the broader Mediterranean ecosystem and to identify the processes that influence those resources. The NPS would also be authorized to study and document cultural resources. This could optimize protection and conservation of archeological sites and historic properties throughout the study area and inform interpretive and educational programs.

In this alternative, there would be specific partnership actions that would help to diminish identity problems and that could provide for more seamless connections between federal and state and other partner agency public parklands. Among these would include partnerships with land management organizations for a collaborative land protection program and management framework. To the extent that these activities solved identity problems and improved cooperation there would be long-term beneficial effects. Without these efforts, there could be an increasing array of confusion among managers, staff and visitors that could affect the ability to partner with cooperators in the expanded boundary.

Cumulative Impacts

Over time, there have been a series of beneficial and adverse cumulative impacts on park operations from establishment and management of SMMNRA. Since its establishment, park operations have grown increasingly complex over time. Improved partnerships with SMMC, MRCA and CSP as well as other agency and private and public agency and organization partners, however, have greatly increased the effectiveness and spread of resource protection messages across the mountains. Alternative A would not contribute additional cumulative impacts on park operations. Alternative B would have negligible to minor cumulative adverse and beneficial effects on park operations. Alternatives C and D would have negligible to moderate cumulative adverse and beneficial effects on park operations. Beneficial effects would outweigh adverse effects in these alternatives to the degree that public and private agencies and organizations worked together to avoid duplication of efforts and to undertake actions that resulted in better protection for study area resources and broadened opportunities to conserve open space.

Conclusion

There would be no change in management complexity (park operations) in alternative A. Alternative B would temporarily increase management complexity during development of the plan and afterwards, if additional staffing or funding were contributed could have long-term beneficial effects by increasing the capability of SMMNRA to assist with implementation of the cooperative conservation plan. Alternatives B-D would have long-term adverse effects by increasing the complexity of park operations, because these would be spread across a broader area. Beneficial effects would also occur if increased staffing and funding were associated with the proposed boundary adjustment and because the adjustment would increase the ability of SMMNRA to work with partners outside its current boundary on implementation actions that affected SMMNRA as a whole and on actions which could lead to long-term persistence of SMMNRA resources.

Socioeconomic Affected Environment

The study area lies within Los Angeles and Ventura counties. This section describes the socioeconomic conditions of these counties and the cities and in and near the Rim of the Valley Corridor.

Table 6-3: 2000-2030 Population Projections

Location	2000 Population	2020 Population	2030 Population	% Pop. Change 2000-2030
Los Angeles County	9,578,960	11,214,237	11,920,289	24%
Ventura County	758,884	956,392	1,049,758	38%
Combined Counties	10,337,844	12,170,629	12,970,047	25%
California	33,871,653	44,135,923	49,240,891	45%

Source: United States Census Bureau, 2000; State of California, Department of Finance, July 2007

Table 6-4: Study Area Communities Population Density (2010)

Name	Type	Area (sq mi)	Total Population	Population Density (people/per sq mi)
Los Angeles	City	468.67	3,792,627	8,092.30
South Pasadena	City	3.41	25,619	7,523.90
Casa Conejo	CDP	0.48	3,249	6,836.51
Glendale	City	30.45	191,719	6,295.60
Pasadena	City	22.98	137,122	5,969.60
Burbank	City	17.34	103,340	5,959.30
La Crescenta-Montrose	CDP	3.43	19,653	5,736.40
Arcadia	City	10.93	56,364	5,159.20
Altadena	CDP	8.71	42,777	4,909.60
Sierra Madre	City	2.95	10,917	3,696.90
Santa Clarita	City	52.73	176,320	3,344.70
Camarillo	City	19.53	65,201	3,338.80
Simi Valley	City	41.48	124,237	2,995.10
Stevenson Ranch	CDP	6.36	17,557	2,761.95
Moorpark	City	12.58	34,421	2,736.40
Monrovia	City	13.60	36,590	2,689.50
Oak Park	CDP	5.29	13,811	2,610.80
Agoura Hills	City	7.79	20,330	2,608.80
La Cañada Flintridge	City	8.63	20,246	2,346.50
Thousand Oaks	City	55.54	126,683	2,302.00
Calabasas	City	13.71	23,058	1,682.36
Westlake Village	City	5.19	8,270	1,595.00
Hidden Hills	City	1.69	1,856	1,099.14
Santa Susana	CDP	1.11	1,037	931.54
Malibu	City	19.79	12,645	638.98
Bell Canyon	CDP	3.62	2,049	565.76
Lake Sherwood	CDP	3.14	1,527	487.02
Santa Rosa Valley	CDP	6.86	3,334	485.95
Topanga	CDP	19.13	8,289	433.33
Acton	CDP	39.26	7,596	193.50
Total		906.36	5,088,444	5,614.12

Source: United States Census Bureau, 2010

Note: Some communities are only partially located in the study area. Figures are for the entire community (both within and adjacent to the study area)

Table 6-5: 2010 Combined County Population Density

Location	Area (sq mi)	Population	Population Density (people/per sq mi)
Los Angeles County	4,057.88	9,818,605	2,419
Ventura County	1,845.30	823,318	446
Combined Counties	5,903.18	10,641,923	1,802
California	155,779.22	37,253,956	239

Source: United States Census Bureau, 2010

Table 6-6: 2010 Race/ Ethnicity (County and State)

	Number/ Percentage							
Race	**Los Angeles County**		**Ventura County**		**Combined Counties**		**California**	
White	4,936,599	50%	565,804	69%	5,502,403	52%	21,453,934	58%
Black or African American	856,874	9%	15,163	2%	872,037	8%	2,299,	6%
American Indian and Native Alaskan	72,828	1%	8,068	1%	80,896	<1%	362,801	1%
Asian	1,346,865	14%	55,446	7%	1,402,311	13%	4,861,007	13%
Native Hawaiian and other Pacific Islander	26,094	<1%	1,643	<1%	27,737	<1%	144,386	<1%
Some other race	2,140,632	22%	140,253	17%	2,280,885	21%	1,815,384	5%
Two or more races	438,713	5%	36,941	5%	475,654	5%	6,317,372	17%
Total Population	9,818,605		823,318		10,641,923		37,253,956	
Hispanic or Latino (of any race)*	4,687,889	48%	331,567	40%	5,019,456	47%	14,013,719	38%

Source: United States Census Bureau, 2010

Note: The 2010 census asked individuals to identify their race and framed the question of Hispanic, Latino or Spanish origin as a separate question about ethnicity independent of race.

Table 6-7: 2011 Per Capita Personal Income

	Per Capita Personal Income (Dollars)	Population
Los Angeles County	$42,564	9,889,056
Ventura County	$45,855	831,771
California	$43,647	37,691,912

Source: State of California Employment Development Department; Department of Commerce, Bureau of Economic Analysis (BEA)

Table 6-8: 2010 College Degrees

	Percent of Population over 25 yrs old with 4-year college degree or higher
Los Angeles County	29%
Ventura County	31%
California	30%
United States	28%

Source: United States Census Bureau, 2010

Population

The Rim of the Valley Corridor study area includes portions of 30 cities in Los Angeles and Ventura counties. These cities held a combined population of 5,088,444 in 2010 (including areas within and adjacent to the study area). Between 2000 and 2010, the study area's population increased by 4%. In the same time frame, the County of Los Angeles (9,818,605 in 2010) grew 3% while Ventura County (823,318 in 2010) grew 9%. For comparison, the State of California grew 10% in population between 2000 and 2010, which is reflective of the national average for population growth.

Los Angeles County's population is projected to increase 24% between 2000 and 2030, while Ventura County is projected to increase by 38% (*Table 6-3: 2000-2030 Population Projections*). Combined, the two counties are expected to grow 26% by the year 2030, which is significantly below the California state average of 45% in 30-year projection.

On average, the population density of the 30-city study area is 5,614 people per square mile (*Table 6-4: Study Area Communities Population Density [2010]; Table 6-5: 2010 Combined County Population Density*). These census designated areas comprise roughly 900 square miles of southern California, of which 350 square miles (40% of 30-city study area) are within the study area. The cities of Los Angeles and South Pasadena represent the two densest cities in the study area with densities of 8,092 and 7,523 individuals, respectively, per square mile.

Race and Ethnicity

An in-depth breakdown of the combined-county population by race and ethnicity is provided in *Table 6-6: 2010 Race/ Ethnicity (County and State)*, but important highlights follow. According to the 2010 census, people identifying their race as white are the largest population in the combined-county area comprising 52% of the total population. Behind them, Asians compose 13% and blacks 8%. Significantly, 47% of the total 2010 population in the combined-county area self-identified as Hispanic or Latino. This percentage stands above the 38% estimate of self-identified Hispanics or Latinos for the State of California in 2010. The 2010 census asked individuals to identify their race and framed the question of Hispanic, Latino or Spanish origin as a separate question about ethnicity independent of race. Individually, 48% of Los Angeles County identifies as Hispanic or Latino ethnicity while 40% of Ventura County identify as Hispanic of Latino ethnicity. Comparing counties, the 2010 Ventura County population was 68.7% white while 50% of Los Angeles' County's total population was white in the same year. This difference in minority-majority population is evident in the counties' black and Asian demographics: while Los Angeles County was 9% black and 14% Asian in 2010, Ventura County was only 2% black and 7% Asian. In the combined-county area, the Asian population grew by the largest percentage (19%) from 2000 until 2010. Self-identification as Hispanic or Latino ethnicity increased by 12% in the same time period. Compared to the California statewide population

Table 6-9: 2010 Employment by Industry

	Number/ Percentage							
Industry	**Los Angeles County**		**Ventura County**		**Combined Counties**		**California**	
Agriculture, forestry, fishing and hunting, and mining	21,643	<1%	17,990	5%	39,633	<1%	370,146	2%
Construction	271,945	6%	23,824	6%	295,769	6%	1,087,881	7%
Manufacturing	503,000	11%	40,678	11%	543,678	11%	1,694,975	10%
Wholesale trade	167,472	4%	13,477	4%	180,949	4%	545,225	3%
Retail trade	478,438	11%	42,427	11%	520,865	11%	1,831,603	11%
Transportation and warehousing, and utilities	235,933	5%	12,872	3%	248,805	5%	783,588	5%
Information	198,235	4%	11,242	3%	209,477	4%	488,366	3%
Finance, insurance, and real estate and rental and leasing	300,506	7%	33,423	9%	333,929	7%	1,120,432	7%
Professional, scientific, and management, and administrative and waste management services	543,258	12%	47,746	12%	591,004	12%	2,049,341	12%
Educational services, and health care and social assistance	909,420	20%	71,291	19%	980,711	20%	3,409,551	21%
Arts, entertainment, and recreation, and accommodation and food services	446,515	10%	31,783	8%	478,298	10%	1,563,669	9%
Other services, except public administration	272,550	6%	18,091	4%	290,641	6%	877,768	5%
Public administration	152,467	3%	19,348	5%	171,815	4%	780,872	5%
Total civilian employed population 16 years +	4,501,382		384,192		4,885,574		16,603,417	

Source: United States Census Bureau 2010

Table 6-10: 2010 Study Area Population by City, Poverty and Minority

Name	2010 Population	Pop. Below Poverty	2010 % Below Poverty (individuals)	2010 Pop. Minority	2010 % Minority
Arcadia	56,364	4,904	9%	38,158	68%
Los Angeles	3,792,627	766,111	20%	1,903,899	50%
Altadena	42,777	4,107	10%	20,191	47%
South Pasadena	25,619	1,563	6%	11,708	46%
Pasadena	137,122	17,552	13%	60,608	44%
Monrovia	36,590	3,513	10%	14,673	40%
Stevenson Ranch	17,557	1,001	6%	6,285	36%
La Crescenta-Montrose	19,653	1,376	7%	6,839	35%
Santa Clarita	176,320	13,577	8%	51,309	29%
Glendale	191,719	25,690	13%	55,407	29%
La Cañada Flintridge	20,246	688	3%	5,709	28%
Burbank	103,340	8,371	8%	28,212	27%
Camarillo	65,201	3,651	6%	16,235	25%
Moorpark	34,421	1,342	4%	8,571	25%
Simi Valley	124,237	7,703	6%	30,687	25%
Casa Conejo	3,249	497	15%	689	21%
Thousand Oaks	126,683	7,601	6%	24,957	20%
Sierra Madre	10,917	939	9%	1,954	18%
Oak Park	13,811	539	4%	2,334	17%
Calabasas	23,058	1,499	7%	3,712	16%
Bell Canyon	2,049	55	3%	326	16%
Agoura Hills	20,330	996	5%	3,192	16%
Acton	7,596	630	8%	1,033	14%
Santa Rosa Valley	3,334	183	6%	433	13%
Santa Susana CDP	1,037	0	<1%	133	13%
Topanga	8,289	564	7%	978	12%
Westlake Village	8,270	281	3%	943	11%
Lake Sherwood	1,527	160	11%	159	10%
Malibu	12,645	936	7%	1,075	9%
Hidden Hills	1,856	67	4%	143	8%
Total	5,088,444	876,094	17%	2,300,551	45%
Los Angeles County	9,818,605		6%		50%
Ventura County	823,318		10%		31%
California	37,253,956		14%		42%

Source: United States Census Bureau 2010

increases of these two groups, 32% and 28% respectively, the combined-county estimates are below the overall state average.

In primary household language, Ventura County was predominantly English-only in 2010 (62% of the population) while Los Angeles County was dominated by non-English languages spoken at home and only 43% English-only households. In Los Angeles County, 39% of households spoke Spanish and 10% spoke languages of Asian or Pacific Islander origin, reflecting the dominant demographics of the geographic area.

Income

In 2011, Los Angeles County had a per capita personal income of $42,564, slightly below the California average of $43,647. In the same year, Ventura County had a higher per capita personal income of $45,855. According to the U.S. Department of Commerce Bureau of Economic Analysis, Los Angeles County was ranked 19th (out of 58 counties for the State of California) in per capita personal income, while Ventura County ranked only slightly higher at 15th place, in 2011 (*Table 6-7: 2011 Per Capita Personal Income*).

Education and Employment

The educational attainment in the combined-county study area is representative of both state and national information. In 2010, 29% of Los Angeles County had attained a college degree. Similarly, 31% of Ventura County residents had attained a college degree. For the State of California, 30% of residents were college graduates in 2010, just slightly more than the United States average of 28% (*Table 6-8: 2010 College Degrees*).

Major components of the combined-county local economy include educational and health care services; professional, scientific, and waste management and services; manufacturing; retail trade; and arts, entertainment, recreation, accommodation, and food services. In 2010, the combined counties had 4,885,574 civilian employed individuals over the age of 16. In 2010 6.4% of the total labor force population was unemployed in Los Angeles County compared to 5.5% of Ventura's total labor force population. For comparison, the State of California maintained a 6.5% unemployment rate in 2010 (*Table 6-9: 2010 Employment by Industry*).

According to State of California Employee Development Department, biomedical engineering, construction aid, and home health aide are the three fastest growing occupations in the County of Los Angeles. Between 2010 and 2020, these occupations are expected to grow by 60%, 50%, and 49% respectively. In Ventura County, data and communications analysis, physical therapy aid, and home health aide are the three fast growing occupations, expected to grow by 38%, 36%, and 35%, respectively, between 2000 and 2018.

Poverty

In the 30-city study area, Los Angeles, Casa Conejo, Glendale, and Pasadena represent the cities with the highest percentage of individuals below poverty; 20, 15, 13, and 13% respectively. In total, 17% of the 30-city population was below the poverty level in 2010. In the same year, 16% of Los Angeles County and only 10% of Ventura County were below poverty. For comparison, the State of California had 14% of the total population below poverty level in 2010, revealing rates of poverty in Los Angeles County and the specific 30-city area to be significantly higher (*Table 6-10: 2010 Study Area Population by City, Poverty and Minority*).

Subgeographic Area Demographics

The following section provides a demographic overview of the subgeographic areas within the larger Rim of the Valley Corridor Study area.

Santa Monica Mountains

In the Santa Monica mountains subarea, eight cities and census-designated places (CDPs) combine to create a demographic profile of this physiographic area. These cities and CDPs, which largely surround the Santa Monica Mountains, include Casa Conejo, Thousand Oaks, Agoura Hills, Westlake Village, Malibu, Beverly Hills, and West Hollywood. According to the 2007-2011 American Community Survey 5-Year Estimates, the average median household income for these communities is projected to be $96,874 with 7% of the combined population below poverty level. The predominant race of this subarea is white, with 75% of the population being classified as "white alone" in the 2010 census. Compared to the California state average for educational attainment, 89% of the Santa Monica Mountains subarea had attained high school graduation or higher, while 81% of all Californians have attained the same educational level. Importantly, while the population in the Santa Monica Mountains is primarily centered in several lower density (or smaller suburban) communities such as Malibu and, Agoura Hills, it is surrounded to the north and east by some of the most populated areas of the City of Los Angeles. This subarea hosts 107,322 housing units.

Conejo Mountain-Las Posas Hills

In the Conejo Mountain-Las Posas subarea, two municipalities combine to create the demographic profile of this physiographic area; Camarillo and Moorpark. With minimal population within the Conejo Mountain-Las Posas Hills site, these cities surround the area. According to the ACS 2007-2011 estimates, the average median household income between these communities is $93,589 with only 5% of the combined population below poverty level. The predominant race of this subarea is white, with 60% of the population identified as "white only" in the 2010 census. Significantly, the second largest demographic is Hispanic, consisting of 26% of the population in 2010. Regarding educational attainment, 91% of the Conejo

Mountain-Las Posas Hills subarea has attained at least a high school diploma (or equivalent), well above the California state average. This subarea hosts 35,440 housing units.

Simi Hills

The Simi Hills subarea, directly north of the Santa Monica Mountains subarea, is composed of the following cities and CDPs: Casa Conejo, Thousand Oaks, Simi Valley, Oak Park and Agoura Hills. The average median household income between these communities is $102,309 with only 6% of the combined population below poverty level, according to the ACS 2007-2011 estimates. This subarea is predominately white with 68% of the population identified as "white only." Almost 20% of the population identifies their ethnicity as Hispanic. Most (92%) of the population has attained at least a high school diploma (or equivalent), well above the California state average of 81%. This subarea hosts 103,895 housing units. Though this subarea is predominately white and affluent, its location is just east of the densely diverse San Fernando Valley.

Santa Susana Mountains

Moorpark, Simi Valley, and Santa Clarita are the three municipalities located in and around the Santa Susana Mountains subarea. For this area's associated communities, the average median household income is $92,013 with 7% of the combined population below poverty level, which is below the California state average of 14%. According to the 2010 Census, this subarea is largely white with 59% of all California residents identified as "white." Another 27% of the subarea's residents, however, identify being of Hispanic or Latino ethnicity. Above average for the State of California, 89% of the Santa Susana Mountains subarea is a high school graduate or higher. This subarea hosts 38,433 housing units.

Upper Santa Clara River

In this subarea, Santa Clarita and Acton combine to create the surrounding area's sociodemographic profile. According to the 2007-2011 ACS 5-Year Estimates, the combined median household income for this community is $85,738 with 8% of individuals below the poverty line. In the combined area, 88% are high school graduates or higher, above the California state average. Importantly, Acton and Santa Clarita comprise a small percentage of this subarea's total population, making this a largely rural and less-dense subarea than others in the study area. This subarea hosts 64,869 housing units.

San Gabriel Mountains Foothills

Around the San Gabriel Mountains, nine cities and CDPs combine to create this subarea's demographic profile: Acton, San Fernando, La Crescenta-Montrose, La Cañada Flintridge, Altadena, Sierra Madre, and Pasadena.These communities lie largely around the edges of the San Gabriel Mountains with minimal population residing within. For this area, the combined average median household income is $86,857 with 11% of the population below poverty. This subarea is largely white, with Hispanic, Asian, and black also present. Eighty-four percent of the combined area has attained at least a high school diploma (or equivalent), slightly above the California state average of 81%. This subarea hosts 104,155 housing units.

Verdugo Mountains-San Rafael Hills

The Verdugo Mountains-San Rafael Hills is composed of four cities and CDPs: La Crescenta-Montrose, La Cañada Flintridge, Glendale, and Burbank. In this area, the combined average median household income is $86,247 with 11% of the population below poverty, below but close to the California state average of 14%. Of the combined area, 87% has attained at least a high school diploma (or equivalent), which is above the California state average in educational attainment. This subarea hosts 139,372 housing units according to the 2010 census.

Arroyo Seco

The Arroyo Seco subarea of the study area, is small in comparison to several of the other site study areas, yet it connects to some of the largest and densest populations. Pasadena, South Pasadena, and Los Angeles combine to create the demographic profile for this area. The combined average median household income for the Arroyo Seco subarea is $77,565 with 11% of the population below poverty, just below the California state average of 14%. Of the combined population, 87% have graduated from high school, according to the 2007-2011 ACS 5-Year Estimates. There are 75,024 housing units in the Arroyo Seco subarea.

Los Angeles River

Similar to the Arroyo Seco subarea, the Los Angeles River subarea is small in comparison to others within the study area yet hosts a dense and diverse population. This subarea is composed of parts of the City of Los Angeles and Hidden Hills. According to the 2007-2011 ACS 5-Year Estimates, the combined average median household income for this area is $127,294 with 13% of the population below poverty, just below the California state average of 14%. In educational attainment, only 67% of the combined population has at least a high school diploma (or equivalent), below the California state average of 81%. There are 11,272 housing units in the Los Angeles River subarea.

San Fernando Valley

The five cities and CDPs that comprise this subarea are: San Fernando, Los Angeles, Burbank, Glendale, and Hidden Hills. According to ACS 5-Year Estimates, the combined average median household income for this area is $156,145 with 12% of the population below poverty. In educational attainment, about 84% of the combined population has attained at least a high school diploma, or equivalent, slightly above the state average of 81%. There are 131,850 housing units in the San Fernando Valley subarea.

Socioeconomics Environmental Consequences

Impacts from Alternative A

If none of the action alternatives is adopted, current social and economic trends as described in the affected environment section would continue. Trends in property values, economic activity, income, population, employment, recreational use and distribution, tourism, community relationships (as affected by local federal land use) would remain unchanged, except associated with continued purchases of public lands by SMMC and other city and county agencies, such as the City of Santa Clarita. There would also continue to be long-term beneficial, albeit slightly detectable impacts on socioeconomics from continued operation of SMMNRA, including from its employment opportunities and the spending power of the NPS, California State Parks and Santa Monica Mountains Conservancy and their employees. Because SMMNRA and other park land agencies in the Santa Monica Mountains would not be identifiable in a regional analysis, these effects are unlikely to be noticeable in the diversified economic base of Los Angeles and Ventura counties. Outside SMMNRA, because area population is increasing, there would be increasing beneficial effects from spending on local economies and there would be ongoing changes in recreational opportunities, but these would be generally unrelated to the selection of alternative A.

Impacts from Alternative B

With a cooperative conservation partnership agreement in the study area, there is a potential for alleviating some socioeconomic conditions associated with lack of access to parklands near some urban areas, particularly on the edges of the San Fernando Valley and portions of Los Angeles, but this would be entirely dependent on the initiative of the agencies involved and on opportunistic purchases of nearby areas. Area visitation would continue to be predominantly local and there would be no new sources of socioeconomic activity. Actions and impacts would therefore be similar to alternative A, but would encompass some benefits for people visiting public parklands over time, with a slow but potentially steady increase in land base from SMMC purchases. Although there would initially be slight, but undetectable increases in economic activity associated with planning for the cooperative conservation plan, this would drop off following completion of the plan because no additional staff would be retained to implement the plan and because establishment of the cooperative conservation area is unlikely to increase visitation or socioeconomic impacts in the study area.

Impacts from Alternative C

With additional areas near urban centers added to SMMNRA, there would be slight, but beneficial impacts on socioeconomics from increasing the range of spending associated with SMMNRA for the NPS and its partners. This smaller, urban expansion of SMMNRA could increase visitation by urban residents located within and adjacent to the expansion area and could also slightly increase visitation from outside this area as recognition of the new parklands by other Los Angeles and Ventura county residents and visitors grew. Because there would not be a change in name designation or a major expansion, it is likely that national park visitors as a whole would not be attracted to SMMNRA as a new area. Instead, it would be more of a regional attraction by visitors looking to investigate areas added to the park for similar recreational opportunities, including hiking, mountain bicycling and horseback riding. Adding new areas, however could increase identity with the national recreation area by more urban residents, including those living near the Los Angeles River and the Arroyo Seco areas, who would find new close-to-home recreational opportunities as new areas were added and existing areas were identified as part of SMMNRA. Slight increases in visitation, although small, could have similarly modest beneficial effects on surrounding local communities which would provide supplies and services to visitors. There could also be a slight increase in the number of jobs associated with managing, restoring and interpreting the parklands for the NPS and its partner agencies, however these beneficial effects would be negligible in the overall Los Angeles and Ventura county region and it is likely that SMMNRA would continue to mostly appeal to local and regional visitors.

Impacts from Alternative D

Because the designated expansion area of SMMNRA would be greater in alternative D, beneficial effects could be greater, where these were affected by this larger area. There could be more jobs and associated economic benefits related to managing, restoring, and interpreting parklands.

These impacts could cause a small increase in visitation over time that could have modest beneficial economic effects on surrounding local communities. Beneficial effects could occur from providing supplies and services to visitors, especially associated with special events or activities, including visits by educational groups. With more emphasis on habitat connectivity, there could be more desire to see other areas in SMMNRA to better understand how these areas are connected and this could initially cause a slight increase in visitation, even by regular visitors to SMMNRA.

Cumulative Impacts

The study area is within a complex region with a long and storied socioeconomic history. A wide range of beneficial and adverse effects within SMMNRA, even if expanded to the degree proposed in alternatives C or D is unlikely to have much of an impact on socioeconomic activity in the Los Angeles and Ventura county metropolitan region. Instead, the alternatives would contribute negligible to minor overall impacts in an area already brimming with a diverse economy. Numerous other activities have a much greater impact on the region's socioeconomics. The cumulative effect of growth and development trends plus the beneficial effects of the alternatives, particularly

C and D, however, could result in a small, net beneficial condition to some local communities as a result of improved urban quality, land protection, and economic benefits from recreation and conservation of public lands. Overall cumulative effects would continue to be dependent on regional economic conditions and population increases (and distribution) rather than actions taken as a result of this study.

Conclusion

The action alternatives (B-D) would contribute negligible beneficial impacts on socioeconomics. These would be greater in alternatives C and D than in B and could range to minor if SMMNRA acquired more of a national identity and began to attract more of a market share of visitors to the region. Alternative A would continue to contribute negligible beneficial impacts over time as ongoing management of SMMNRA continued. These impacts could potentially be more detectable in Ventura County because SMMNRA headquarters are located there and because of the number of staff living in the area.

Environmental Justice Affected Environment

Supporting the conservation of land and providing improved access to recreational space is an important endeavor for social and environmental equity. Recreation areas in the study area serve a large and diverse population in need of increased access to healthy, recreational space. It has been well documented, by groups such as The City Project and the Trust for Public Land, that southern California bears a significant brunt of California's environmental inequality (*Figure 2-14: Map of Park Poverty, Income Poverty and People of Color Throughout the Study Area* in *Chapter 2: Resource Description*). With a rapidly growing population, that hosted the second largest metropolitan statistical area in the U.S. in 2010 (the Los Angeles-Long Beach-Santa Ana metropolitan statistical area, at 12,828,837 people), Los Angeles and Ventura Counties represent geographic areas that would benefit from improved public land access and recreational opportunities. In particular, a large population of youth and above average rates of childhood obesity reveals high need for improved recreational access. Understanding the relative size and density of major cities served by the study area, also enforces recreational need.

In 2013, Los Angeles and Ventura counties both hosted populations where those under 18 represented a quarter of all residents. Youth benefit immensely from access to recreational space and close-to-home nature and are often targeted as park users. Of these youth, 32% of those within Los Angeles County and 34% of those within Ventura County were considered obese. These statistics are close to the California state average of 38% in childhood obesity. Additionally, based on 2010 Census results, the nation's most densely populated urban area is Los Angeles/Anaheim/Long Beach with nearly 7,000 people per square mile. In the study area, the most densely populated urban areas include: Los Angeles (8,092 people per square mile), South Pasadena (7,524 people per square mile), Casa Conejo (6,837 people per square mile), and Glendale (6,296 people per square mile). With high urban density, there is an increased need for open space.

According to The City Project's *Healthy Parks, Schools, and Communities: Mapping Green Access in Southern California*, benefits of increased park access include: "physical, psychological and social health; improved academic performance; positive alternatives to gangs, crime, drugs, and violence; and economic vitality" (The City Project 2011). It is important to note, however, that the presence of green spaces is not enough. Despite the existence of recreation space in a given region, many local communities remain park poor from a lack of physical access as well as the presence of historic social and political discrimination. To truly improve the accessibility of healthy green space for all residents in a given area, consideration should be given to urban "connector" projects and improved transportation networks to given sites.

In February of 1994, President Clinton issued Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The Executive Order identifies agency responsibilities:

> *To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Marianas Islands.*

The Council on Environmental Quality provided *Environmental Justice: Guidance under the National Environmental Policy Act* in December 1997 to assist federal agencies in addressing environmental justice in their NEPA procedures. This guidance defines low-income population, minority, and minority population as follows:

> *Low-income population:*
> *Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.*

Minority:
Individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; black, not of Hispanic origin; or Hispanic.

Minority Population:
Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50% or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. In identifying minority communities, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native American), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds (CEQ 1997).

Cities and CDPs with the highest minority population in the study area are Arcadia (68%), Los Angeles (50%), Altadena (47%), South Pasadena (46%), and Pasadena (44.2%).

Environmental Justice Environmental Consequences

Impacts from Alternative A

The NPS has numerous partnerships programs with youth corps and conservation organizations that serve as a means to introduce minority and low income children and young adults to environmental and conservation issues. Youth corps and job corps partnerships provide a solid environmental learning experience for the youth involved, while at the same time leaving a legacy of work which significantly benefits the parks and community. In particular, SMMNRA has partnerships with local school districts to encourage youth to take part in educational opportunities that eventually may lead to summer internships and even jobs. The NPS also seeks to identify opportunities to develop partnerships with tribal governments, consistent with mission needs to provide necessary technical assistance to enhance tribal capacity to address environmental, health, and welfare concerns.

More than 33 million visits occur per year in SMMNRA. A wide array of people enjoy the diverse resources in the Santa Monica Mountains. Visitors hike, bicycle or ride horses on hundreds of miles of mountain trails or enjoy scenic driving, beaches and other areas. The park is within easy access of more than 18 million people who live and work in the rural, suburban and urban environments surrounding and within the Santa Monica Mountains, including Los Angeles, Ventura, Orange and Santa Barbara Counties. Los Angeles County alone is home to more than 9 million people, most of whom live within an hour's drive of the park. The western part of the Santa Monica Mountains is within easy access of the suburban communities of the western San Fernando, Simi and Conejo valleys. The eastern portion is more proximate to the dense urban communities of Los Angeles, including the central and eastern portions of the San Fernando Valley (USC 2003:77). The mountains and adjacent coastline constitute an expanse of natural landscape whose scenic, natural and cultural values are multiplied because of the area's location on the fringe of this large and expanding urban complex (NPS 1982:3).

Within the study area, a portion of the local population can be characterized as socially or economically disadvantaged. Population growth trends over time will likely exacerbate the amount and intensity of this condition. These people may be unable to take part in recreational opportunities in the study area due to physical barriers (e.g. adult and childhood obesity or other ailments) or other factors, such as lack of access to or the inability to afford transportation. There are also fewer public parklands in highly developed urban areas. Much of SMMNRA is closer to suburban and rural populations, who given the economic climate in southern California must have higher economic status to live in these areas. There are also physical deficiencies in open space and few or no transportation options to SMMNRA and other Rim of the Valley Corridor parklands without access to a private vehicle.

As a result, many economically disadvantaged populations in the study area lack access and the ability to partake of existing opportunities due to lack of close-to-home open space, lack of effective transportation, lack of culturally advantageous facilities or opportunities, and lack of knowledge about recreation and natural resources. Some populations also lack the desire to protect public parklands or have little or no knowledge or interest about public parklands beyond the nearest city facilities. This lack of knowledge and sense of relevancy may stem from living conditions (related to poor access) or cultural conditions (related to little desire to visit natural areas, where self-reliance may be important). Under current conditions, all of these factors would continue to contribute to minor to moderate adverse effects on access to public parklands for these populations.

Impacts from Alternative B

Impacts from alternative B would be the same as in alternative A. Because this alternative calls for expanded partnership authority, it would be up to the partners to determine whether to provide for additional public recreational access for disadvantaged groups. If this was an emphasis, this alternative does encompass much of the study area boundary and could offer

some of the most urban residents additional opportunities to experience public parklands.

Impacts from Alternative C

Among the alternatives, alternative C would have the greatest likelihood of providing increased access to recreation for underserved populations and of providing close-to-home recreational opportunities in urban communities. This alternative would potentially offer the greatest benefits for disadvantaged populations because of its emphasis on providing recreational opportunities for visitors, residents and neighbors within the expanded boundary of SMMNRA. If these goals were realized, there could be long-term beneficial impacts on disadvantaged populations and communities. For this to occur, however, there would need to be long-term commitments to working with public transportation providers and with cities and communities through grant-writing and determining other means to fund this endeavor.

Impacts from Alternative D

Alternative D impacts would be similar to alternative C, except that instead of targeting expanded recreational opportunities, there would be a greater emphasis on providing wildlife habitat connectivity. Nonetheless, because the expanded SMMNRA boundary under this alternative would also include some areas close to urban residents, there could be some long-term beneficial effects on providing recreational opportunities for disadvantaged populations. In addition, it is likely that SMMNRA would continue to find ways to partner with organizations to provide more parkland opportunities for underrepresented populations, some of which may include the economically or socially disadvantaged. As a result, it is likely that there would be minor beneficial effects compared to alternative A.

Cumulative Impacts

Population growth trends in the study area and the surrounding region are likely to put additional pressure on available open space. Considering that public lands in this area are currently heavily visited, recreational opportunities and qualities are likely to diminish if nothing is done.

For a time, SMMNRA provided the ParkLINK Shuttle to provide alternative access to parks. SMMNRA desired to increase the number of underrepresented groups in park visitation, which had historically been overwhelmingly white and affluent. In addition, the shuttle was intended to reduce motor vehicle impacts, offering potential negligible beneficial effects on air quality. The shuttle was also designed to provide high-quality visitor experiences on board and at bus stops and it was to serve as a model partnership in SMMNRA. Although these goals were initially equal, the primary goal eventually became the need to increase the number of park visitors who came from underrepresented groups. Unfortunately, despite great efforts on the part of the park and its partners, the ParkLINK shuttle failed to achieve many of its goals and was prematurely discontinued because its high costs and poor ridership did not meet expectations.

Alternatives A and B would contribute few beneficial or adverse cumulative effects on environmental justice. Where possible SMMNRA would continue to work with partner organizations to more effectively encourage visitation from underrepresented groups, including socially and/or economically disadvantaged populations, such as was done by providing the ParkLINK shuttle. Alternative D would have slightly more beneficial effects, while alternative C would do the most to alleviate environmental justice issues regarding public parklands in the Rim of the Valley Corridor study area. Therefore, the cumulative effect of growth and development trends, plus the effects of each alternative, would likely result in a net beneficial condition in regard to recreational opportunities for disadvantaged populations. Overall, cumulative impacts would likely diminish compared to alternative A.

Conclusion

The action alternatives, particularly alternatives C-D, would be likely to improve conditions regarding the health and well-being of disadvantaged populations by creating new public lands and where possible enhancing public access to those lands for people within the study area. Alternative A would continue to result in minor to moderate adverse effects. Alternative B would offer some improvements but these would be mostly dependent on non-federal partners to implement.

Table 6-11: Summary of Environmental Consequences by Impact Topics				
Impact Topic	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Land Use	No effect on private lands No additional regulatory or land use authority over existing agencies or local governments. Long-term beneficial effects from preserving 340,000 acres of parks and open space and from ongoing stewardship and cooperation in protection of SMMNRA public lands. Ongoing adverse effects from regional growth and development; from poor or no coordination among groups working toward land protection, and on prime and unique farmlands from conversion to other uses.	Similar to Alternative A with local governments retaining land use authority. Additional beneficial effects from protecting open space through development of cooperative conservation plan. Potential for local governments to leverage funding and resources for additional open space protection within study area. Increased access to NPS and other expertise in natural and cultural resources protection and interpretation/education. Expansion of SMMNRA cooperative management efforts in study area. Potential for minor beneficial effects on prime and unique farmlands if cooperative conservation plan encouraged protection.	Local and state governments would continue to have regulatory authority over nonfederal lands within the SMMNRA boundary. However, where applicable and depending on authorizing legislation some activities within the boundary could be subject to permitting related to nonfederal oil and gas leasing, mineral extraction, and solid waste facilities. Beneficial effects from expansion of SMMNRA authority to work cooperatively with park neighbors within and outside boundary. Potential for local jurisdictions to increase public land protection in areas under their authority. Opportunity for NPS to purchase lands from willing sellers to better protect significant resources, such as key wildlife corridors or other open space connections. Enhanced ability to protect a connected system of public lands through cooperative partnerships and targeted land acquisition. Same potential for minor beneficial effects on prime and unique farmlands if these were protected through voluntary easements or stewardship programs.	Same as Alternative C plus: More opportunities to work with partners to protect significant lands on the western edge of the study area.
Paleontological Resources	Beneficial effects from ongoing protection of one of the most diverse and extensive assemblages of fossil resources in the national park system in SMMNRA. Continued outstanding opportunities for research regarding paleontological resources from proximity to world-class educational institutions resulting in opportunities to learn about fossil resources in SMMNRA. Ongoing adverse effects from threats, such as unauthorized collecting, erosion, and development of unprotected areas containing fossil resources.	Same as Alternative A plus: Beneficial effects from opportunities to protect additional fossiliferous formations in Rim of the Valley area through cooperative conservation plan. Expanded opportunities for research and protection of paleontological resources beyond the current SMMNRA boundary through partnerships.	Same as Alternative B plus: Beneficial effects from improved opportunities to protect additional fossiliferous formations not within SMMNRA. Beneficial effects from opportunities to document and research additional paleontological resources, such as in the Santa Susana Mountains and to work with others to protect them.	Similar to Alternative C plus: Beneficial effects from opportunities to better understand the Conejo volcanics, Sespe and Llajas formations, among others in the western study area.

Table 6-11: Summary of Environmental Consequences by Impact Topics (continued)				
Impact Topic	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Water Resources	No effect on existing water rights, water supply, treatment, flood protection or other infrastructure or functions associated with maintaining the public water supply in the study area. No new beneficial uses. Alternative A would continue to have no effect on water quantity or water supply management actions in most of the study area. Where public lands are protected, there would continue to be negligible to moderate direct and indirect beneficial effects. Actions to manage recreational use and to construct visitor facilities would likely continue to have negligible to minor, and occasionally the potential for moderate, localized adverse effects.	Actions in Alternative B would be the same as Alternative A. No specific actions would affect water resources; however, the cooperative conservation plan could improve protection of open space, increasing the potential for beneficial effects.	Same as Alternative B, plus: Potential for additional beneficial effects from protection of lands for conservation purposes if these contained important water resources and additional adverse effects from actions associated with recreational use of these public lands. Because Alternative C would likely include more degraded lands and more recreational opportunities, there could be slightly more adverse effects from increased focus on recreational opportunities.	Similar to Alternative C, with a potential for more beneficial effects from additional opportunities to protect lands in partnership with others in the expanded boundary.
Vegetation	Alternative A would continue to have a range of beneficial and adverse effects. Beneficial effects would be contributed by a variety of direct and indirect actions, the most important of which would continue to be long-term protection of vegetation communities in SMMNRA by the NPS and partner agencies and in the Rim of the Valley Corridor study area by other public and private agencies and organizations. Other beneficial effects would be contributed from restoration actions. Adverse impacts would continue to be related to actions to provide for public recreational use, including for trails and other facilities. Negligible to minor localized impacts would also likely continue to occur from visitor use.	Alternative B would have potential for additional beneficial effects on vegetation if the cooperative management plan resulted in additional protection of plant communities not found in SMMNRA or targeted restoration of important areas.	Alternatives C would have greater long-term beneficial effects from a coordinated approach to protection of plant communities and from improved cooperative actions by public and private agencies and organizations to manage them. Protection of more areas could allow for plant community resilience as the area continues to develop and change.	Same as Alternative C plus more opportunities for vegetation community protection because of larger area within the proposed boundary expansion.
Wildlife	Alternative A would likely continue to have long-term beneficial and negligible to moderate localized adverse effects from ongoing activities in SMMNRA. The actions of other agencies in land conservation and habitat restoration would also likely contribute long-term beneficial effects in the study area. To the extent that SMMNRA and others conducted research and agencies and organizations working together in the study area continued to identify and moved toward implementation of protection for wildlife habitat linkages and movement corridors, there would be long-term beneficial effects.	Alternative B would have similar long-term beneficial effects from land protection and actions to protect wildlife in SMMNRA. In the study area, Alternative B could provide the direction needed for agencies and organizations working on their own to conserve resources and to protect lands, a long-term indirect beneficial effect.	Alternative C would provide for additional land conservation by the NPS in the study area that could be directed toward wildlife and wildlife habitat protection.	Actions in Alternative D would be likely to result in greater long-term beneficial effects due to the broad direction for connectivity and the larger area encompassed within the proposed boundary expansion.

Table 6-11: Summary of Environmental Consequences by Impact Topics (continued)				
Impact Topic	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Special Status Species	Existing threats and ongoing adverse effects to sensitive species and habitats would continue and could also continue to have adverse effects; however, it is likely that because of the importance of sensitive species and habitat conservation, that all of the alternatives could contribute beneficial effects. In Alternative A the SMMC would continue to have the ability to protect important resource areas in the legislated portions of the Rim of the Valley study area.	Similar to Alternative A.	In Alternatives C and D, the NPS would also have this authority if a potential boundary expansion occurred. As a result, there would be mandates from more than one agency to protect sensitive species and habitats, likely resulting in long-term beneficial effects from targeted actions to protect these species.	Similar to Alternative C.
Prehistoric and Historic Archeological Resources	Ongoing beneficial effects from opportunities to study and document the more than 1,000 archeological sites within SMMNRA boundary. Opportunities to study the more than 550 additional sites in the Rim of the Valley corridor would be dependent on the initiative of existing landowners, such as SMMC. Where these exist in the Angeles National Forest and San Gabriel Mountains National Monument, there would be similar ongoing research and documentation as in SMMNRA. Periodic surveys of new public lands or areas proposed for development could increase the number of known sites. A range of beneficial effects would also occur from traditional use activities in SMMNRA and Angeles National Forest and San Gabriel Mountains National Monument.	Impacts would be similar to Alternative A. Partnership opportunities in Alternative B could lead to additional survey of and protection for archeological sites in areas beyond SMMNRA where agency and organization goals coincided. This could lead to better understanding of identified transition zones between ethnographic territories. Agencies and organizations managing land in the partnership area could work together to better understand the resources in the Rim of the Valley areas.	Impacts would be similar to Alternative B. Additional long-term beneficial effects from the potential boundary expansion could include comprehensive research and documentation of sites in the area and creation of a network of stakeholders to recommend sites for protection. Protecting lands related to the transition between the Chumash and Tongva/Gabrielino and new sites related to the Serrano could improve understanding of archeological resources.	Impacts would be similar to Alternative C, however, there would be more opportunities to protect additional significant archeological resources because additional areas would be included within the boundary and/or partnership areas.
Historic Structures/ Cultural Landscapes	There would be a range of beneficial and adverse effects, depending on the resource, its location and the land manager/ owner and their own or access to expertise in historic/cultural resources. Some effects could range from minor to moderate and could affect the integrity of the historic structure or cultural landscape. In SMMNRA and other federally protected areas, overall effects would be beneficial and long-term, with preservation maintenance actions and ongoing research to assess key characteristics to preserve.	Impacts would be similar to Alternative A; however, there would be a greater likelihood of long-term beneficial effects because of improved knowledge and access to NPS cultural resources staff. In addition development of cultural resources protection plans would identify the character-defining features of the historic structure and/or cultural landscape and identify the means to protect and/or to undertake preservation actions for these.	Similar to Alternative B.	Similar to Alternative B.
Visitor Experience: Access and Transportation	No or negligible beneficial or adverse effects on visitor access and transportation	Same as Alternative A.	Negligible to minor adverse and beneficial effects on transportation and minor beneficial effects on visitor access, with the potential for localized moderate beneficial effects from providing more close-to-home opportunities for urban communities.	Same as Alternative C; however there could be less emphasis on urban community recreational opportunities, depending on funding and management priorities, because of the larger size of this boundary expansion.

Table 6-11: Summary of Environmental Consequences by Impact Topics (continued)				
Impact Topic	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Visitor Experience: Visitor Use Opportunities	There would continue to be a wide range of visitor use opportunities offered both within and outside SMMNRA. Visitors and residents would have the opportunity to participate in both formal and informal recreational activities at an array of sites, with long-term beneficial effects from the diversity of activities offered and from the assortment of groups that manage the sites within the study area boundary.	Impacts would be similar to Alternative A, except that through the cooperative conservation plan, there is a possibility that visitors and residents could better understand the choice of activities available to them because these could be more widely advertised.	The range and breadth of activities available within the boundary of SMMNRA would increase. Public access and information about these could also increase, providing a range of beneficial effects.	Visitor use opportunities would be broad and far-reaching and would include activities provided by the NPS and its partner agencies within an expanded SMMNRA that would encompass more visitor use opportunities.
Visitor Experience: Interpretation, Education and Partnerships	Continued moderate beneficial and negligible to minor adverse effects on visitor experience from continued limited understanding of the NPS and its role in SMMNRA. There would be no additional beneficial effects associated with management of Rim of the Valley study area sites except associated with SMMC/ MRCA continued acquisition/ and management of additional parklands.	Alternative B would likely slightly improve coordination among land management agencies in the Rim of the Valley study area and would therefore have some additional negligible beneficial effects from additional interpretation and education on visitor experience, but because entities within the partnership area would remain largely separate and there would likely be no overall coordination in interpretation and education, these benefits would remain slight.	Alternatives C and D would have some overall long-term beneficial and adverse effects from including more land within the boundary of SMMNRA, where visitor experience would likely be enhanced by more interpretive and educational programs offered by a wide array of agencies and organizations. Because, however, these alternatives would increase the number of entrances to SMMNRA parklands and because there is already some difficulty in identifying SMMNRA as a NPS unit and in identifying parklands within it as part of SMMNRA, there would continue to be some minor adverse effects on visitor understanding of the area unless extensive marketing occurred. The interpretive, educational and outreach programs themselves would continue to add greatly to visitor understanding of parklands and would likely meet a full range of other objectives in enhancing the visitor experience in these areas. Alternative C, however would have a focus on underserved communities and underrepresented groups and could, in the long-run improve these group's' identity with parklands, contributing to long-term protection of public lands, including national parks.	Similar to Alternative C plus: Alternative D would expand the area covered by these programs. Alternative C, however could have a focus on underserved communities and underrepresented groups and could, in the long-run improve these group's' identity with parklands, contributing to long-term protection of public lands, including national parks
Park Operations and Partnerships	There would be no change to SMMNRA management complexity (park operations).	There would be long-term adverse effects by increasing the complexity of park operations, because these would be spread across a broader area. There could also be a wide variety of beneficial effects from expanding public parklands protection through the SMMNRA model.	Beneficial effects would also occur if increased staffing and funding were associated with the proposed boundary adjustment and because the adjustment would increase the ability of SMMNRA to work with partners outside its current boundary on implementation actions that affected SMMNRA as a whole and on actions which could lead to long-term persistence of SMMNRA resources.	Similar to Alternative C, but the area encompassed by the potential boundary expansion would be larger and would therefore add to increasing the complexity associated with park operations and partnerships.

Table 6-11: Summary of Environmental Consequences by Impact Topics (continued)				
Impact Topic	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Socioeconomics	Ongoing negligible beneficial impacts contributed over time as ongoing management of SMMNRA continued. These impacts could potentially be more detectable in Ventura County because of its SMMNRA headquarters are located there and because of the number of staff living in the area.	Same as Alternative A plus: increasing potential for additional negligible beneficial effects.	Similar to Alternatives A and B with a potential for impacts to range to minor if SMMNRA acquired more of a national identity and began to attract more of a market share of visitors to the region.	Same as Alternative C.
Environmental Justice	Much of SMMNRA is closer to suburban and rural populations, who given the economic climate in southern California must have higher economic status to live in these areas. SMMNRA goals would continue to include linking disadvantaged populations to park resources through special initiatives when possible. Many economically disadvantaged populations in the study area lack access and the ability to partake of existing opportunities due to lack of close-to-home open space, lack of effective transportation, lack of culturally advantageous facilities or opportunities, and lack of knowledge about recreation and natural resources. Some populations also lack the desire to protect public parklands or have little or no knowledge or interest about public parklands beyond the nearest city facilities. These factors would continue to contribute to minor to moderate adverse effects on access to public parklands for these populations.	Similar to Alternative A; however partnership opportunities could include providing additional links to public lands for disadvantaged populations.	Potential to improve conditions regarding the health and well-being of disadvantaged populations by creating new public lands and where possible enhancing public access to those lands for people within the study area.	Same as Alternative C







Top left: Sign from a set for the television show at Santa Monica Mountains National Recreation Area. Top right: white-tailed kite. Bottom photo: Students participating in the S.H.R.U.B. program at SMMNRA. Photos: NPS.

CONSULTATION AND COORDINATION

7

Chapter 7: Consultation and Coordination

Describes the history of public and agency coordination during the planning effort.

Public Involvement

In 2008, Congress directed the National Park Service (NPS) to complete a special resource study of the Rim of the Valley Corridor, and to determine whether the area, or a portion of it, was eligible and suitable to be managed as a unit of the National Park System. The NPS provided opportunities for the many elected officials, organizations, local governments, and residents of the greater Los Angeles metropolitan region to learn about, and contribute to, the study process.

Throughout the special resource study process, the NPS used workshops, public meetings, stakeholder meetings, field trips, newsletters, and websites to gather input on issues, opportunities, and alternatives. A web page for the Rim of the Valley Corridor Special Resource Study (www.nps.gov/pwro/rimofthevalley/) was developed to provide updates on the study. It contained detailed information about the special resource study process, background information about the study area, and was updated periodically to include all news releases and newsletters.

Agency Partners

The NPS partnered with the Santa Monica Mountains Conservancy (SMMC), California State Parks, and the Angeles National Forest in preparing this report. These core agency partners served as advisors in project planning, communications, involvement of interested parties, and community engagement. The partners also contributed resource data and expertise.

Scoping

The NPS initiated public scoping on the special resource study in June 2010. The scoping process included meetings with agencies, elected officials and organizations, public meetings and workshops, two newsletters, a web page, and written public comments. These sources were used to identify the issues, significant resources, ideas for alternatives, and impact topics to be considered for environmental analysis.

The NPS used a variety of methods to notify the public and stakeholders of the study initiation. On June 4, 2010, a Notice of Scoping was published in the Federal Register, formally initiating the comment period for public scoping. The comment period extended to October 29, 2010.

The NPS launched the Rim of the Valley Corridor Special Resource Study process on June 4, 2010, at a public event at Eaton Canyon Nature Center in Pasadena, California. A newsletter (Newsletter #1) was published to announce the start of scoping, describe the study process, and to provide information on how the public and stakeholders could participate in the study process. Numerous newspaper stories and several radio reports announced the beginning of the study and invited the public to sign-up for email updates and to learn more about the study at the project website.

The NPS compiled a mailing list of nearly 2,000 contacts and mailed newsletters that described the study process and announced the dates and locations of public scoping meetings held throughout the study area. Nine public meetings were held, in Chatsworth, Los Angeles, Santa Clarita, Thousand Oaks, Calabasas, Tujunga, Altadena, and Sylmar.



The study process was officially publicly launched at Eaton Canyon Nature Center in Pasadena, California. Congressman Adam B. Schiff and representatives from the National Park Service and the U.S. Forest Service spoke at the event. NPS photo.




Public meetings, like the scoping meeting in Chatsworth shown above, typically included a formal presentation, followed by questions and answers. Participants then joined smaller breakout groups to provide comments and engage in discussion. NPS photo.

During the public scoping period, the NPS received 2,108 comment letters and e-mails from individuals, agencies, cities, organizations and elected officials. Input on the scope of the study was also provided by the approximately 400 people who attended the public meetings. Additional input was gathered through meetings with various individuals, agencies, organizations, cities, and local elected officials. After scoping comments were received, the NPS published a second newsletter summarizing the comments. The majority of scoping comments were related to the study process and scope, opportunities, potential impacts, and important resources to consider.

The NPS shared a summary of the public comments in Newsletter #2 during Summer 2011. The majority of the public comments identified the desire to protect habitat corridors between large areas of open space such as the Angeles National Forest, the Los Padres National Forest and Santa Monica Mountains National Recreation Area (SMMNRA); preserve scenic vistas; and to bring park experiences closer to dense urban population centers such as the San Fernando Valley and downtown Los Angeles. Public concerns also identified concerns with potential impacts to local land use control, property rights, the authority of existing regulatory agencies, fire fuels management, and public health and safety. The public also expressed concerns about limited funding for existing parks at all levels of government.

The following is a list of the agencies, communities, organizations, and elected officials with whom the study team met during public scoping. Formal consultation letters were also sent to agencies and tribal groups.

Public Scoping Stakeholder Meetings

- Elected Officials and Staff Briefings (four meetings)
- California State Parks
- California Senator Fran Pavley's Office
- California Assemblyman Bob Blumenfield's Office
- California Assemblyman Portantino's Office
- California Assemblywoman Audra Strickland's Office
- California Assemblyman Feuer
- California Assemblyman Cameron Smyth's Office
- Calleguas Municipal Water District – Habitat and Recreation Committee
- City of Agoura Hills
- City of Burbank
- City of Los Angeles, Department of Recreation and Parks
- City of Los Angeles, City Council Staff
- City of Santa Clarita
- Conejo Open Space Conservation Agency
- Conejo Recreation and Parks Department
- Congressman Adam Schiff's Office
- Congressman Brad Sherman's Office
- Congressman Howard Berman's Office
- Congressman Elton Gallegly's Office
- Crescenta Valley Town Council
- Las Virgenes Homeowners Federation
- Los Angeles County Board of Supervisors Office (Supervisor Michael Antonovich and Supervisor Zev Yaraslovsky staff)
- Los Angeles County Department of Parks and Recreation
- Lower Los Angeles and San Gabriel Rivers and Mountains Conservancy



A series of newsletters, made available in both electronic and hard copy formats, provided information to the public at key points during the study process. Newsletters were made available in both English and Spanish.

- National Parks and Conservation Association
- Naval Base Ventura County
- Sierra Club
- Santa Monica Mountains Conservancy
- U.S. Forest Service, Angeles National Forest
- USGS Western Ecological Center
- Ventura County Planning Division

Resource Analysis

Following the scoping phase of the study process, the NPS began analyzing study area resources to determine if there were resources of national significance and if so, whether those resources would be suitable for inclusion in the national park system or for addition to Santa Monica Mountains National Recreation Area. In addition to consulting written documents, the NPS consulted with subject-matter experts and scholars from various agencies and organizations to determine resource significance. NPS cultural and natural resource professionals were also consulted during this process.

Experts, Scholars, and National Park Service Professionals Consulted or Contributed Information

- John Alderson, Paleontologist, Los Angeles County Museum of Natural History
- Timothy Babalis, Environmental Historian, Pacific West Regional Office, National Park Service
- Melanie Beck, Outdoor Recreation Planner, SMMNRA, National Park Service
- Steven Bernal, Naturalist, Los Angeles County Parks and Recreation
- Erin Boydston, Wildlife Biologist, formerly with USGS
- Christy Brigham, Chief, Planning, Science and Resource Management, SMMNRA, National Park Service
- Gary Brown, Cultural Resource Program Manager, SMMNRA, NPS
- Tom Contreras, Forest Supervisor, USFS-Angeles National Forest
- Dan Cooper, Cooper Ecological Monitoring
- Rosi Dagit, Senior Conservation Biologist, Resource Conservation District of the Santa Monica Mountains
- Arturo Delgado, Biologist, USFS-Angeles National Forest
- Sabrina Drill, Natural Resources Advisor, University of California Cooperative Extension
- Paul Edelman, Deputy Director, Santa Monica Mountains Conservancy
- Kate Eschelbach, Visitor Services, SMMNRA, National Park Service
- Eugene Fritsche, Professor Emeritus of Geology, California State University Northridge
- Suzanne Goode, Senior Biologist, California State Parks
- Scott Harris, Fisheries Biologist, California Department of Fish and Wildlife
- Phil Holmes, former Anthropologist, SMMNRA, National Park Service
- Shirley Imsand, Los Angeles County Division of Regional Planning
- Pam Irvine, Geologist, California Geologic Survey
- Elise Kelley, Executive Director, Santa Clara River Watershed Conservancy
- Chester King, Archeologist, Topanga Anthropological Consultants
- Bruce Lander, Paleontologist, Paleo Environmental Associates, Inc.
- Betsey Landis, California Native Plant Society
- Mickey Long, (retired) Director of Los Angeles County Nature Centers, Los Angeles County Department of Parks and Recreation
- David Magney, David Magney Environmental Consultanting
- Mary Meyer, Plant Ecologist, California Department of Fish and Wildlife

- Don Mullally, Biologist (retired), City of Los Angeles
- EJ Remson, Senior Program Manager, The Nature Conservancy
- Seth Riley, Wildlife Biologist, SMMNRA, National Park Service
- Tarja Sagar, Biotechnician, SMMNRA, National Park Service
- Ray Sauvajot, Chief, Natural Resource Programs, Pacific West Regional Office, National Park Service (former)
- Justin Seastrand, NEPA Coordinator, USFS-Angeles National Forest
- Woody Smeck, Superintendent, Sequoia & Kings Canyon NPs (former Superintendent, SMMNRA), National Park Service
- Richard Squires, Professor of Geology, California State University Northridge
- Mary Stecheson, Collections Manager, Invertebrate Paleontology, Los Angeles County Museum of Natural History
- Nancy Steele, Executive Director, Council for Watershed Health
- Robert Taylor, Fire GIS Specialist, SMMNRA
- Barbara Tejada, Archeologist, California State Parks
- John Tiszler, Plant Ecologist, SMMNRA, National Park Service
- Mike Wilson, Fire Communications and Education Specialist, SMMNRA, National Park Service
- Marti Witter, Fire Ecologist, SMMNRA, National Park Service
- Sean Woods, Superintendent, California State Parks - Los Angeles Parks

Alternatives Development

The study team held a workshop with agency partners and NPS professionals to generate ideas for alternatives in early 2012. Based on ideas from public scoping and this workshop, the study team generated a set of preliminary alternative concepts for public review and input.

The study team released preliminary alternative concepts in Newsletter #3 for public review in the fall of 2012. The public comment period was open from October 22, 2012 to January 7, 2013. The study team produced and distributed over 2,600 newsletters to agencies, organizations and individuals through the mail and at public and stakeholder meetings. In addition, an email notifying people of the availability of the newsletter on the study website was distributed to 2,900 contacts. A Spanish language translation of the newsletter was made available online and at public meetings. In addition, the newsletter was posted for comment on the NPS' Planning, Environment and Public Comment (PEPC) website. News releases announcing the availability of the preliminary alternative concepts newsletter and the public meeting schedule were distributed to local media, and several news stories were published.

The purposes of the newsletter were to: 1) present preliminary study findings; 2) present preliminary alternatives; and 3) solicit comments on the preliminary findings and alternatives. The newsletter also contained information on the date, time, and locations of public meetings that were held to solicit comments on the preliminary findings. Between November and December 2012, the study team conducted seven public meetings at locations throughout the study area in Thousand Oaks, Santa Clarita, Glendale, Chatsworth, Encino, Moorpark and Pasadena. In all, approximately 125 people participated in the meetings. At each meeting, the study team presented the preliminary findings and alternative concepts and answered questions. Participants shared comments and suggestions in small groups facilitated by NPS staff and volunteers. Facilitators recorded comments on flipcharts during the discussion and participants were provided with comment forms and information about how to submit comments electronically and through the mail. In addition to the public meetings, the NPS study team held meetings with interested local, state, and federal government agencies, organizations, and communities. The study team also hosted two online, web-based forums. During these meetings, the study team presented the preliminary findings and alternative concepts using WebEx conferencing software. Participants asked questions and provided comments online using WebEx and through a telephone conference line that was made available. Approximately 15 people participated in the online public meetings. In addition to the public meetings, the NPS study team held meetings with local, state and federal government agencies, organizations, communities, and Congressional offices.

The NPS received approximately 5,200 comments, most of which were submitted via written letters and through e-mail. Of these written comments, 4,930 included four different standardized, or form letters from organized groups or efforts. The four form letters focused on the following areas: 1) potential effects of the Rim of the Valley Trail on shooting ranges (64 letters or emails), 2) preference for the no action alternative (76 letters or emails), 3) preference for combining the boundary adjustment areas for alternatives C and D (4,755 letters or emails), and 4) preference for preserving the Santa Susana Field Laboratory (SSFL) property as part of Santa Monica Mountains National Recreation Area (35 letters or emails). In addition to the form letters, another 270 comments were submitted by government agencies, organizations, and individuals. In addition to the individually submitted written comments received, the notes from the public meetings were considered public comments.

In general the public supported the preliminary findings. Although some people did not want to see any changes in the NPS role within the study area, many commenters wanted to see an alternative that combined increased recreational access with maximum habitat connectivity through the study area.

Most commenters suggested that the NPS develop an alternative that explores a broader boundary adjustment for SMMNRA that would include the areas proposed in both preliminary alternatives C and D. Some commenters had specific suggestions for areas to be considered, or not considered. Some agencies and individuals that own and manage land in the study area expressed concern that inclusion in SMMNRA could impact or limit future uses of such lands.

Common goals and objectives identified by commenters included protecting habitat and wildlife corridors and providing more recreation and public enjoyment opportunities that are more available to urban residents. Public comments also suggested that private land stewardship plays an important role in conservation and should be part of the alternatives.

In June 2013, another workshop was conducted to identify preliminary impacts associated with the alternatives.

Alternatives Stakeholder Meetings

- California State Parks
- California Department of Transportation
- Congressman Adam Schiff's Office
- Congressman Brad Sherman's Office
- Federation of Hillside and Canyon Associations
- Glendale Homeowners Coordinating Council
- Glenoaks Canyon Homeowners Association
- Las Virgenes Homeowners Federation
- Linkage Implementation Alliance
- Los Angeles County Department of Parks and Recreation
- Los Angeles County Department of Regional Planning
- Resource Conservation District of the Santa Monica Mountains
- Santa Monica Mountains Conservancy
- Santa Susana Mountain Park Association
- Southwest Herpetological Society
- U.S. Forest Service, Angeles National Forest
- U.S.G.S. Western Ecological Center
- Ventura County Planning Division

Agency and Tribal Consultation

In January 2011, the National Park Service sent out a letter to agencies and tribal organizations announcing the commencement of the study and requested agency input.

Agencies and Elected Officials

- U.S. Army Corps of Engineers
- U.S. Fish & Wildlife Service
- National Marine Fisheries Service
- California Coastal Commission
- California State Historic Preservation Office
- Native American Heritage Commission

Federally Recognized Tribes

- Santa Ynez Band of Chumash Indians
- San Manuel Band of Mission Indians
- Morongo Band of Mission Indians
- Pala Band of Mission Indians

Other Tribal Organizations

- Fernandeno Tataviam Band of Mission Indians
- L.A. City/County Native American Indian Commission
- Ti'At Society/Inter-Tribal Council of Pimu
- Kitanemuk & Yowlumne Tejon Indians
- San Fernando Band of Mission Indians
- Gabrieleno/Tongva San Gabriel Band of Mission Indians
- Gabrielino Tongva Nation
- Gabrielino Tongva Indians of California Tribal Council
- Shoshoneon Gabrieleno Band of Mission Indians
- Gabrielino-Tongva Tribe
- Tongva Ancestral Territorial Tribal Nation
- Barbareno/Ventureno Band of Mission Indians
- In addition, letters were sent to seven Native American individuals suggested by the Native American Heritage Commission

List of Agencies and Elected Officials to Whom Copies of the Draft Special Resource Study Are Being Sent

The Executive Summary of this report is being sent to the entire study mailing list which includes approximately 1,500 people and organizations. A postcard was sent to the mailing list allowing recipients to request a printed copy of the full report. The full study report is also posted on the Internet, at:

www.nps.gov/pwro/rimofthevalley/

Agencies and elected officials are on the study mailing list and are among those that are being sent the draft special resource study and environmental assessment (*Table 7-1: List of Agencies and Elected Officials to Whom Copies of the Draft Special Resource Study Are Being Sent*).

Table 7-1: List of Agencies and Elected Officials to Whom Copies of the Draft Special Resource Study Are Being Sent

Tribal Governments and Organizations

All tribal governments and organizations sent a consultation letter in 2011 (see previous section) are also being sent a copy of the draft special resource study.

Federal Agencies and Elected Officials

Federal Agencies

Advisory Council on Historic Preservation
Bureau of Indian Affairs
Environmental Protection Agency, Region 9
National Aeronautics and Space Administration
- Jet Propulsion Laboratory
- Santa Susana Field Laboratory

National Marine Fisheries Service
Natural Resources Conservation Service
U.S. Army Corps of Engineers
U.S. Attorney's Office, Central District of California
U.S. Bureau of Land Management
- California Coastal National Monument
- Palm Springs - South Coast Field Office
- Bakersfield Field Office

U.S. Department of Energy
U.S. Fish & Wildlife Service
- Carlsbad Fish and Wildlife Office
- Ventura Fish and Wildlife Office

U.S. Forest Service
- Angeles National Forest
- Los Padres National Forest
- Pacific Southwest Research Station
- Region 5
- Southern California Consortium

U.S. Geological Survey
U.S. Navy - Naval Base Ventura County (Point Mugu)

U.S. Senate

Honorable Barbara Boxer
Honorable Dianne Feinstein

U.S. House of Representatives

Honorable Stephen Knight, District 25
Honorable Julia Brownley, District 26
Honorable Judy Chu, District 27
Honorable Adam Schiff, District 28
Honorable Tony Cardenas, District 29
Honorable Brad Sherman, District 30
Honorable Grace Napolitano, District 32
Honorable Ted Lieu, District 33
Honorable Xavier Becerra, District 34
Honorable Karen Bass, District 37
Honorable Lucille Roybal-Allard, District 40
Honorable Mark Takano, District 41
Honorable Maxine Waters, District 43
Honorable Alan Lowenthal, District 47

State Agencies and Elected Officials

California State Agencies

California Air Resource Board
California Coastal Commission
California Coastal Conservancy
California Conservation Corps
California Department of Fish and Wildlife
California Department of Forestry and Fire Protection
California Department of Parks and Recreation (California State Parks)
California Department of Public Health
California Department of Toxic Substances Control
California Department of Transportation (CalTrans)
California Department of Water Resources
California Environmental Protection Agency
California Geological Survey
California State Lands Commission
California Wildlife Conservation Board
Los Angeles Regional Water Quality Control Board
State Historic Preservation Office
State Water Resources Control Board
San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy
Santa Monica Mountains Conservancy

State Agencies and Elected Officials (continued)

California State Assembly

Honorable Tom Lackey, Assembly District 36
Honorable Das Williams, Assembly District 37
Honorable Scott Wilk, Assembly District 38
Honorable Patty Lopez, Assembly District 39
Honorable Chris Holden, Assembly District 41
Honorable Mike Gatto, Assembly District 43
Honorable Jacqui Irwin, Assembly District 44
Honorable Matt Dababneh, Assembly District 45
Honorable Adrin Nazarian, Assembly District 46
Honorable Ed Chau, Assembly District 49
Honorable Richard Bloom, Assembly District 50
Honorable Jimmy Gomez, Assembly District 51
Honorable Miguel Santiago, Assembly District 53
Honorable Sebastian Mark Ridley Thomas, Assembly District 54

California State Senate

Honorable Bob Hertzberg, Senate District 18
Honorable Hannah-Beth Jackson, Senate District 19
Honorable Steve Knight, Senate District 21
Honorable Ed Hernandez, Senate District 22
Honorable Kevin de Leon, Senate District 24
Honorable Carol Liu, Senate District 25
Honorable Ben Allen, Senate District 26
Honorable Fran Pavley, Senate District 27
Honorable Bob Huff, Senate District 29

Local Agencies

Cities

Agoura Hills
Beverly Hills
Burbank
Calabasas
Camarillo
Glendale
Hidden Hills
La Cañada Flintridge
Los Angeles
Malibu
Moorpark
Pasadena
San Fernando
Santa Clarita
Santa Monica
Sierra Madre
Simi Valley
South Pasadena
Thousand Oaks
West Hollywood
Westlake Village

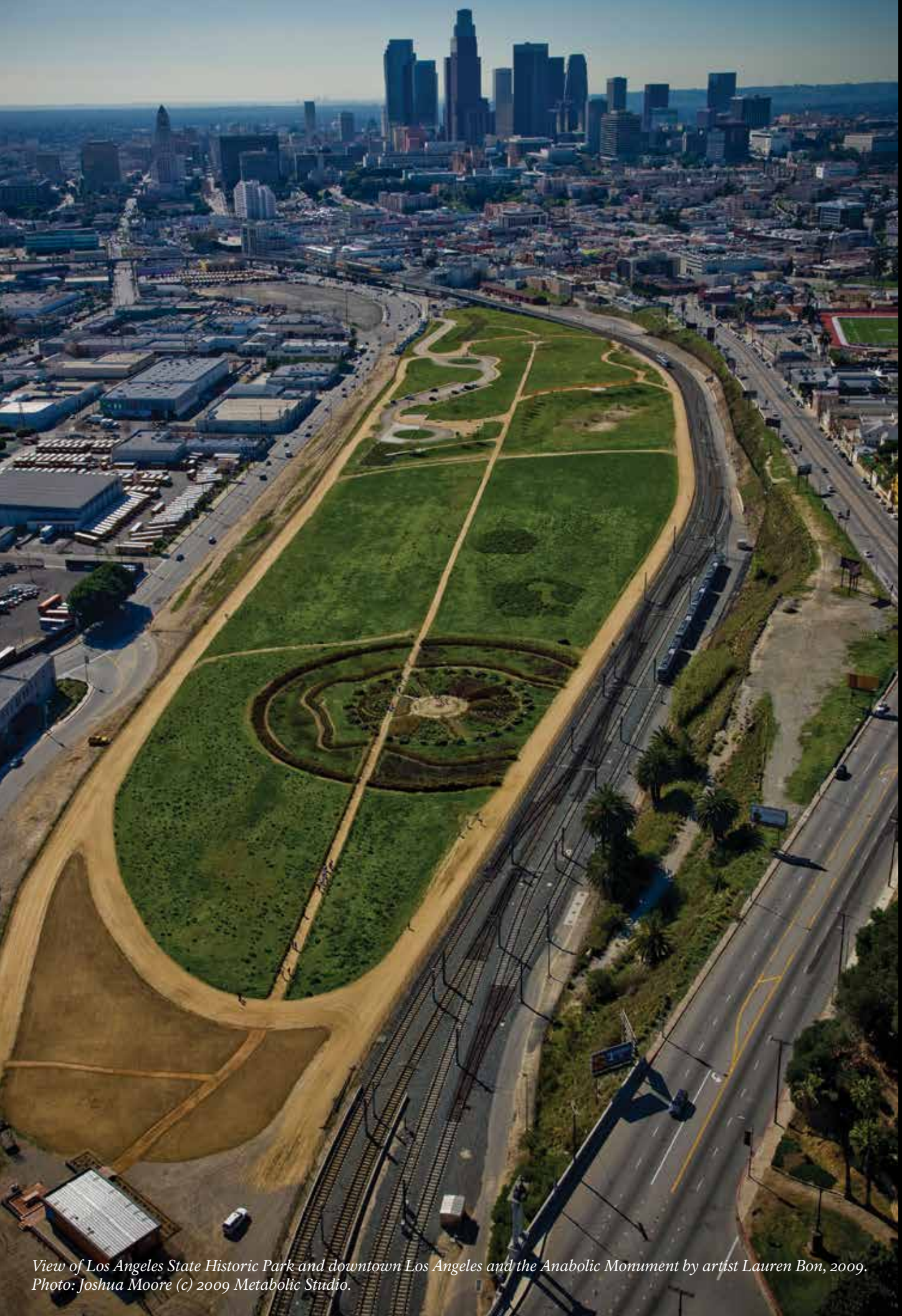
Counties

County of Los Angeles
County of Ventura

Other Local Districts and Agencies

Southern California Association of Governments
Calleguas Municipal Water District
Camarosa Water District
Castaic Lake Water Agency
Conejo Open Space Conservation Agency
Conejo Recreation & Parks District
Desert and Mountain Conservation Authority
Fox Canyon Groundwater Management Agency
Las Virgenes Municipal Water District
Metropolitan Water District of Southern California
Mountains Recreation Conservation Authority
Pleasant Valley Mutual Water Company
Pleasant Valley Park & Recreation District
Rancho Simi Recreation & Parks District
Resource Conservation District of the Santa Monica Mountains
Sanitation Districts of Los Angeles County
Santa Clarita Watershed Recreation and Conservation Authority
Southern California Edison
Southern California Gas Company
United Water Conservation District
Ventura County Resource Conservation District
Ventura County Waterworks District No. 1

APPENDICES



View of Los Angeles State Historic Park and downtown Los Angeles and the Anabolic Monument by artist Lauren Bon, 2009. Photo: Joshua Moore (c) 2009 Metabolic Studio.

Appendix A: Study Legislation

CONSOLIDATED NATURAL RESOURCES ACT OF 2008

PUBLIC LAW 110-229—MAY 8, 2008
110th Congress

SEC. 327. RIM OF THE VALLEY CORRIDOR STUDY

(a) IN GENERAL.—The Secretary of the Interior (referred to in this section as the ''Secretary'') shall complete a special resource study of the area known as the Rim of the Valley Corridor, generally including the mountains encircling the San Fernando, La Crescenta, Santa Clarita, Simi, and Conejo Valleys in California, to determine—

(1) the suitability and feasibility of designating all or a portion of the corridor as a unit of the Santa Monica Mountains National Recreation Area; and
(2) the methods and means for the protection and interpretation of this corridor by the National Park Service, other Federal, State, or local government entities or private or non-profit organizations.

(b) DOCUMENTATION.—In conducting the study authorized under subsection (a), the Secretary shall document—

(1) the process used to develop the existing Santa Monica Mountains National Recreation Area Fire Management Plan and Environmental Impact Statement (September 2005); and
(2) all activity conducted pursuant to the plan referred to in paragraph (1) designed to protect lives and property from wildfire.

(c) STUDY REQUIREMENTS.—The Secretary shall conduct the study in accordance with section 8(c) of Public Law 91–383 (16 U.S.C. 1a–5).

(d) REPORT.—Not later than 3 years after the date on which funds are made available to carry out this title, the Secretary shall submit to the Committee on Natural Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report containing—

(1) the results of the study; and
(2) any recommendations of the Secretary.

Approved May 8, 2008

Appendix B: New Area Studies Act

TITLE III—STUDY REGARDING ADDITION OF NEW NATIONAL PARK SYSTEM AREAS
SEC. 301. SHORT TITLE.

This title may be cited as the ''National Park System New Areas Studies Act''.

SEC. 302. PURPOSE.

It is the purpose of this title to reform the process by which areas are considered for addition to the National Park System.

SEC. 303. STUDY OF ADDITION OF NEW NATIONAL PARK SYSTEM AREAS.

Section 8 of Public Law 91–383 (commonly known as the National Park System General Authorities Act; 16 U.S.C. 1a–5) is amended as follows:

(1) By inserting ''GENERAL AUTHORITY.—'' after ''(a)''.

(2) By striking the second through the sixth sentences of subsection (a).

(3) By redesignating the last two sentences of subsection (a) as subsection (f) and inserting in the first of such sentences before the words ''For the purposes of carrying'' the following: ''(f) AUTHORIZATION OF APPROPRIATIONS.—''.

(4) By inserting the following after subsection (a):

''(b) STUDIES OF AREAS FOR POTENTIAL ADDITION.—

(1) At the beginning of each calendar year, along with the annual budget submission, the Secretary shall submit to the Committee on Resources of the House of Representatives and to the Committee on Energy and Natural Resources of the United States Senate a list of areas recommended for study for potential inclusion in the National Park System.

''(2) In developing the list to be submitted under this subsection, the Secretary shall consider—

''(A) those areas that have the greatest potential to meet the established criteria of national significance, suitability, and feasibility;

''(B) themes, sites, and resources not already adequately represented in the National Park System; and

''(C) public petition and Congressional resolutions.

''(3) No study of the potential of an area for inclusion in the National Park System may be initiated after the date of enactment of this subsection, except as provided by specific authorization of an Act of Congress.

''(4) Nothing in this Act shall limit the authority of the National Park Service to conduct preliminary resource assessments, gather data on potential study areas, provide technical and planning assistance, prepare or process nominations for administrative designations, update previous studies, or complete reconnaissance surveys of individual areas requiring a total expenditure of less than $25,000.

''(5) Nothing in this section shall be construed to apply to or to affect or alter the study of any river segment for potential addition to the national wild and scenic rivers system or to apply to or to affect or alter the study of any trail for potential addition to the national trails system.

''(c) REPORT.—

(1) The Secretary shall complete the study for each area for potential inclusion in the National Park System within 3 complete fiscal years following the date on which funds are first made available for such purposes. Each study under this section shall be prepared with appropriate

opportunity for public involvement, including at least one public meeting in the vicinity of the area under study, and after reasonable efforts to notify potentially affected landowners and State and local governments.

''(2) In conducting the study, the Secretary shall consider whether the area under study—

''(A) possesses nationally significant natural or cultural resources and represents one of the most important examples of a particular resource type in the country; and

''(B) is a suitable and feasible addition to the system.

''(3) Each study—

''(A) shall consider the following factors with regard to the area being studied—

''(i) the rarity and integrity of the resources;

''(ii) the threats to those resources;

'(iii) similar resources are already protected in the National Park System or in other public or private ownership;

''(iv) the public use potential;

''(v) the interpretive and educational potential;

''(vi) costs associated with acquisition, development and operation;

''(vii) the socioeconomic impacts of any designation;

''(viii) the level of local and general public support; and

''(ix) whether the area is of appropriate configuration to ensure long-term resource protection and visitor use;

''(B) shall consider whether direct National Park Service management or alternative protection by other public agencies or the private sector is appropriate for the area;

''(C) shall identify what alternative or combination of alternatives would in the professional judgment of the Director of the National Park Service be most effective and efficient in protecting significant resources and providing for public enjoyment; and

''(D) may include any other information which the Secretary deems to be relevant.

''(4) Each study shall be completed in compliance with the National Environmental Policy Act of 1969.

''(5) The letter transmitting each completed study to Congress shall contain a recommendation regarding the Secretary's preferredmanagement option for the area.

''(d) NEW AREA STUDY OFFICE.—The Secretary shall designate a single office to be assigned to prepare all new area studies and to implement other functions of this section.

''(e) LIST OF AREAS.—At the beginning of each calendar year, along with the annual budget submission, the Secretary shall submit to the Committee on Resources of the House of Representatives and to the Committee on Energy and Natural Resources of the Senate a list of areas which have been previously studied which contain primarily historical resources, and a list of areas which have been previously studied which contain primarily natural resources, in numerical order of priority for addition to the National Park System. In developing the lists, the Secretary should consider threats to resource values, cost escalation factors, and other factors listed in subsection (c) of this section. The Secretary should only include on the lists areas for which the supporting data is current and accurate.''.

(5) By adding at the end of subsection (f) (as designated by paragraph (3) of this section) the following: ''For carrying out subsections (b) through (d) there are authorized to be appropriated $2,000,000 for each fiscal year.''

Appendix C: NPS *Management Policies 2006* (Sections 1.2, 1.3 and 3.5)

1.2 The National Park System

The number and diversity of parks within the national park system grew as a result of a government reorganization in 1933, another following World War II, and yet another during the 1960s. Today there are nearly 400 units in the national park system. These units are variously designated as national parks, monuments, preserves, lakeshores, seashores, wild and scenic rivers, trails, historic sites, military parks, battlefields, historical parks, recreation areas, memorials, and parkways. Regardless of the many names and official designations of the park units that make up the national park system, all represent some nationally significant aspect of our natural or cultural heritage. They are the physical remnants of our past—great scenic and natural places that continue to evolve, repositories of outstanding recreational opportunities, classrooms of our heritage, and the legacy we leave to future generations—and they warrant the highest standard of protection.

It should be noted that, in accordance with provisions of the Wild and Scenic Rivers Act, any component of the National Wild and Scenic Rivers System that is administered by the Park Service is automatically a part of the national park system. Although there is no analogous provision in the National Trails System Act, several national trails managed by the Service have been included in the national park system. These national rivers and trails that are part of the national park system are subject to the policies contained herein, as well as to any other requirements specified in the Wild and Scenic Rivers Act or the National Trails System Act.

1.3 Criteria for Inclusion

Congress declared in the National Park System General Authorities Act of 1970 that areas comprising the national park system are cumulative expressions of a single national heritage. Potential additions to the national park system should therefore contribute in their own special way to a system that fully represents the broad spectrum of natural and cultural resources that characterize our nation. The National Park Service is responsible for conducting professional studies of potential additions to the national park system when specifically authorized by an act of Congress, and for making recommendations to the Secretary of the Interior, the President, and Congress. Several laws outline criteria for units of the national park system and for additions to the National Wild and Scenic Rivers System and the National Trails System.

To receive a favorable recommendation from the Service, a proposed addition to the national park system must (1) possess nationally significant natural or cultural resources, (2) be a suitable addition to the system, (3) be a feasible addition to the system, and (4) require direct NPS management instead of protection by other public agencies or the private sector. These criteria are designed to ensure that the national park system includes only the most outstanding examples of the nation's natural and cultural resources. These criteria also recognize that there are other management alternatives for preserving the nation's outstanding resources.

1.3.1 National Significance

NPS professionals, in consultation with subject-matter experts, scholars, and scientists, will determine whether a resource is nationally significant. An area will be considered nationally significant if it meets all of the following criteria:

1. It is an outstanding example of a particular type of resource.
2. It possesses exceptional value or quality in illustrating or interpreting the natural or cultural themes of our nation's heritage.
3. It offers superlative opportunities for public enjoyment or for scientific study.
4. It retains a high degree of integrity as a true, accurate, and relatively unspoiled example of a resource.
5. National significance for cultural resources will be evaluated by applying the National Historic Landmarks criteria contained in 36 CFR Part 65 (Code of Federal Regulations).

1.3.2 Suitability

An area is considered suitable for addition to the national park system if it represents a natural or cultural resource type that is not already adequately represented in the national park system, or is not comparably represented and protected for public enjoyment by other federal agencies; tribal, state, or local governments; or the private sector.

Adequacy of representation is determined on a case-by-case basis by comparing the potential addition to other comparably managed areas representing the same resource type, while considering differences or similarities in the character, quality, quantity, or combination of resource values. The comparative analysis also addresses rarity of the resources, interpretive and educational potential, and similar resources already protected in the national park system or in other public or private ownership. The comparison results in a determination of whether the proposed new area would expand, enhance, or duplicate resource protection or visitor use opportunities found in other comparably managed areas.

1.3.3 Feasibility

To be feasible as a new unit of the national park system, an area must be (1) of sufficient size and appropriate configuration to ensure sustainable resource protection and visitor enjoyment (taking into account current and potential impacts from

sources beyond proposed park boundaries), and (2) capable of efficient administration by the Service at a reasonable cost.

In evaluating feasibility, the Service considers a variety of factors for a study area, such as the following:

- size
- boundary configurations
- current and potential uses of the study area and surrounding lands
- landownership patterns
- public enjoyment potential
- costs associated with acquisition, development, restoration, and operation
- access
- current and potential threats to the resources
- existing degradation of resources
- staffing requirements
- local planning and zoning
- the level of local and general public support (including landowners)
- the economic/socioeconomic impacts of designation as a unit of the national park system

The feasibility evaluation also considers the ability of the National Park Service to undertake new management responsibilities in light of current and projected availability of funding and personnel.

An overall evaluation of feasibility will be made after taking into account all of the above factors. However, evaluations may sometimes identify concerns or conditions, rather than simply reach a yes or no conclusion. For example, some new areas may be feasible additions to the national park system only if landowners are willing to sell, or the boundary encompasses specific areas necessary for visitor access, or state or local governments will provide appropriate assurances that adjacent land uses will remain compatible with the study area's resources and values.

1.3.4 Direction NPS Management

There are many excellent examples of the successful management of important natural and cultural resources by other public agencies, private conservation organizations, and individuals. The National Park Service applauds these accomplishments and actively encourages the expansion of conservation activities by state, local, and private entities and by other federal agencies. Unless direct NPS management of a studied area is identified as the clearly superior alternative, the Service will recommend that one or more of these other entities assume a lead management role, and that the area not receive national park system status.

Studies will evaluate an appropriate range of management alternatives and will identify which alternative or combination of alternatives would, in the professional judgment of the Director, be most effective and efficient in protecting significant resources and providing opportunities for appropriate public enjoyment. Alternatives for NPS management will not be developed for study areas that fail to meet any one of the four criteria for inclusion listed in section 1.3.

In cases where a study area's resources meet criteria for national significance but do not meet other criteria for inclusion in the national park system, the Service may instead recommend an alternative status, such as "affiliated area." To be eligible for affiliated area status, the area's resources must (1) meet the same standards for significance and suitability that apply to units of the national park system; (2) require some special recognition or technical assistance beyond what is available through existing NPS programs; (3) be managed in accordance with the policies and standards that apply to units of the national park system; and (4) be assured of sustained resource protection, as documented in a formal agreement between the Service and the nonfederal management entity. Designation as a "heritage area" is another option that may be recommended. Heritage areas have a nationally important, distinctive assemblage of resources that is best managed for conservation, recreation, education, and continued use through partnerships among public and private entities at the local or regional level. Either of these two alternatives (and others as well) would recognize an area's importance to the nation without requiring or implying management by the National Park Service.

3.5 Boundary Adjustments

The boundary of a national park may be modified only as authorized by law. For many parks, such statutory authority is included in the enabling legislation or subsequent legislation that specifically authorizes a boundary revision. Where park-specific authority is not available, the Land and Water Conservation Fund Act of 1965, as amended, provides an additional but limited authority to adjust boundaries.

The act provides for boundary adjustments that essentially fall into three distinct categories: (1) technical revisions; (2) minor revisions based upon statutorily defined criteria; and (3) revisions to include adjacent real property acquired by donation, purchased with donated funds, transferred from any other federal agency, or obtained by exchange. Adjacent real property is considered to be land located contiguous to but outside the boundary of a national park system unit.

As part of the planning process, the Park Service will identify and evaluate boundary adjustments that may be necessary or desirable for carrying out the purposes of the park unit. Boundary adjustments may be recommended to

- protect significant resources and values, or to enhance opportunities for public enjoyment related to park purposes;

- address operational and management issues, such as the need for access or the need for boundaries to correspond to logical boundary delineations such as topographic or other natural features or roads; or
- otherwise protect park resources that are critical to fulfilling park purposes.

If the acquisition will be made using appropriated funds, and it is not merely a technical boundary revision, the criteria set forth by Congress at 16 USC 460l-9(c) (2) must be met. All recommendations for boundary changes must meet the following two criteria:

- The added lands will be feasible to administer considering their size, configuration, and ownership; costs; the views of and impacts on local communities and surrounding jurisdictions; and other factors such as the presence of hazardous substances or exotic species.
- Other alternatives for management and resource protection are not adequate.

These criteria apply conversely to recommendations for the deletion of lands from the authorized boundaries of a park unit. For example, before recommending the deletion of land from a park boundary, a finding would have to be made that the land did not include a significant resource, value, or opportunity for public enjoyment related to the purposes of the park. Full consideration should be given to current and future park needs before a recommendation is made to delete lands from the authorized boundaries of a park unit. Actions consisting solely of deletions of land from existing park boundaries would require an act of Congress.

Appendix D: Resource Inventories

TABLE D-1: DAMS WITHIN THE STUDY AREA

Facility Name	Ownership Type	Dam Purpose(s)
Calleguas Creek Watershed		
Lang Creek Detention Basin	Local Government	Flood Control
Las Llajas	Local Government	Flood Control, Water Supply
Runkle	Local Government	Flood Control
Wood Ranch	Public Utility	Water Supply
Los Angeles River Watershed		
Sepulveda Dam	Federal	Flood Control
Hansen Dam	Federal	Flood Control
Haines Canyon Debris Dam	Federal	Flood Control
Blanchard M1	Federal	Water Supply
Lopez Dam	Federal	Flood Control
Pickens M1	Federal	Water Supply
Wilson Debris Dam	Local Government	Flood Control, Debris Control
Chevy Chase 1290	Local Government	Water Supply
Green Verdugo	Local Government	Water Supply
Pacoima*	Local Government	Flood Control, Water Supply
Elysian	Local Government	Water Supply
Blanchard Debris Basin	Local Government	Flood Control, Debris Control
Bailey Debris Basin	Local Government	Flood Control, Debris Control
Hansen Recreational Lake	Local Government	Water Supply, Recreation
Lower Van Norman Bypass	Local Government	Water Supply
Devils Gate	Local Government	Flood Control, Water Supply
Los Angeles Reservoir	Local Government	Water Supply
Stough Debris Basin	Local Government	Flood Control, Debris Control
Brand Debris Basin	Local Government	Flood Control, Debris Control
Schoolhouse Debris Basin	Local Government	Flood Control, Debris Control
Sierra Madre Villa	Local Government	Flood Control, Debris Control
Lower Sunset Debris Basin	Local Government	Flood Control, Debris Control
East Glorietta	Local Government	Water Supply
La Tuna Debris Basin	Local Government	Flood Control, Debris Control
Chatsworth	Local Government	Water Supply
Eaton Wash Debris Basin	Local Government	Flood Control, Debris Control
Diederich Reservoir	Local Government	Water Supply
Glenoaks 968 Reservoir	Local Government	Water Supply
Encino	Local Government	Water Supply
Eagle Rock	Local Government	Water Supply
Big Tujunga No. 1	Local Government	Flood Control, Water Supply
Rubio Debris Basin	Local Government	Flood Control, Debris Control
Reservoir No. 1	Local Government	Water Supply
Reservoir No. 4	Local Government	Water Supply
Reservoir No. 5	Local Government	Water Supply
Brand Park	Local Government	Water Supply
Santa Clara River Watershed		
Stevenson Ranch	Local Government	Flood Control, Debris Control
Santa Monica Bay		
Upper Franklin Dam	Federal	Flood Control, Water Supply, Fish and Wildlife Pond
Century	State	Water Supply, Recreation
J W Wisda	State	Other

TABLE D-1: DAMS WITHIN THE STUDY AREA (Continued)

Facility Name	Ownership Type	Dam Purpose(s)
Santa Monica Bay		
Lower Franklin	Local Government	Hydroelectric, Water Supply
Lower Franklin #2	Local Government	Water Supply
Greystone Reservoir	Local Government	Water Supply
Upper Hollywood	Local Government	Water Supply
Upper Stone Canyon	Local Government	Water Supply
Santa Ynez Canyon	Local Government	Water Supply
Stone Canyon	Local Government	Water Supply
Mulholland	Local Government	Water Supply
Westlake Reservoir	Public Utility	Irrigation, Water Supply
Lake Eleanor	Public Utility	Water Supply, Recreation
Potrero	Private	Water Supply
Lindero	Private	Water Supply, Recreation
Malibu Lake Club	Private	Water Supply, Recreation
Lake Sherwood	Private	Irrigation, Water Supply, Recreation

Source: USACOE, National Inventory of Dams database. Queried April, 2014.
*At its time of construction, this was the tallest arch dam in the USA (USGS and Southern California Earthquake Center, 1998)

TABLE D-2: DEBRIS AND DETENTION FACILITIES IN THE STUDY AREA

Watershed	Number of Basins	Managing agency
Calleguas Creek Watershed	13	VCWPD
Los Angeles River Watershed	96	LADPW
Santa Clara River Watershed	8	LADPW (8)
Santa Monica Bay Watershed	5	LADPW (4); VCWPD (2)

Source: Los Angeles County Department of Public Works and Los Angeles County Flood Control District 2013, VCWPD 2005

TABLE D-3: GROUNDWATER BASINS

Groundwater Basin	Area (acres)
Santa Clara River Valley - Oxnard Subbasin	58,000
Santa Clara River Valley - Santa Clara River Valley East Subbasin	66,200
Pleasant Valley	21,600
Arroyo Santa Rosa Valley	3,740
Las Posas Valley	42,200
Simi Valley	12,100
Conejo Valley	28,900
Coastal Plain of Los Angeles - Santa Monica Subbasin	32,100
Coastal Plain of Los Angeles - Hollywood Subbasin	10,500
Coastal Plain of Los Angeles - Central Subbasin	177,000
San Fernando Valley	145,000
San Gabriel Valley	154,000
Hidden Valley	2,210
Thousand Oaks Area	3,110
Russell Valley	3,100
Malibu Valley	613
Raymond	26,200

Source: California Department of Water Resources. 2003

TABLE D-4: WATER RECLAMATION PLANTS IN THE STUDY AREA

Agency	Facility(ies)
Los Angeles Department of Water and Power	Tillman Water Reclamation Plant L.A./Glendale Water Reclamation Plant Hyperion Treatment Plant
Sanitation Districts of Los Angeles County	La Canada Water Reclamation Plant
City of Simi Valley	Simi Valley County Sanitation District Water Quality Control Plant
Ventura County Waterworks District #1	Moorpark Wastewater Treatment Plant
Las Virgenes Municipal Water District	Tapia Water Reclamation Facility
Camrosa Water District	Camrosa Water Reclamation Facility
City of Thousand Oaks	Hill Canyon Wastewater Treatment Plant
Camarillo Sanitation District	Camarillo Sanitation District Water Reclamation Plant

Source: Ventura, County of, Resource Management Agency, Planning Division

FEDERALLY THREATENED AND ENDANGERED PLANTS

Braunton's milk vetch (FE)

Braunton's milk vetch (*Astragalus brauntonii*) is associated with chaparral and coastal sage scrub habitats. It is endemic to only three counties in southern California: Ventura, Los Angeles, and Orange counties. Within the study area, populations have been found in the Simi Hills (Dayton, Palo Comado, Cheeseboro Canyons, and the Santa Susana Field Laboratory), the hills above Oak Park and Thousand Oaks, and in the Santa Monica Mountains. Braunton's milk vetch is a perennial herb that normally lives 3 to 5 years. It typically blooms from January to August. Its habitat consists of ancient marine sediments, creating shallow, saline soils high in calcium and low in nitrogen and potassium. The plant is not found in valley or foothill grasslands, preferring ridges and saddles, though it does germinate well in disturbed, weedy areas, especially along well-traveled, compacted trails and power line easements. Populations vary in size from a handful of individuals up to 2000 individual plants at a few sites (Landis 2007). Within the study area there are approximately a dozen sites designated by USFWS as critical habitat for Braunton's milkvetch. Ten of these are in the Simi Hills and two are in the Santa Monica Mountains.

California Orcutt Grass (FE)

California Orcutt grass (*Orcuttia california*) is an annual grass associated with vernal pool systems in Los Angeles, Ventura, Riverside, Orange and San Diego Counties. Listed as endangered by both federal and state governments, this species is in decline. Specimens have been located in the upper Stanta Clara watershed, the Simi Hills, and the northern portion of the Conejo Mountain / Las Posas Hills area (CDFG 2012). Threats include habitat loss and degradation due to urban and agricultural development, livestock grazing, off-road vehicle use, trampling, and nonnative invasive plants, and other factors (USFWS 1998).

Lyon's pentachaeta (FE)

Lyon's pentachaeta (*Pentachaeta lyonii*) is found on clay soils in ecotonal areas between grasslands and shrublands. It occupies pocket grassland sites that intergrade with shrublands, as well as the edges of roads and trails. This endemic sunflower is narrowly localized with a highly fragmented and discontinuous 15-mile distribution in the Santa Monica Mountains and the Conejo Mountain area (Montclef Ridge). This set of discontinuous areas has been designated critical habitat for this species. It is threatened by urban development, competition with nonnative species, loss of contiguous habitat for potential pollinators, fuels modification (by disking or mowing), fire suppression activities, and trampling. Five of the ten largest populations are on public lands managed by the National Park Service, the Las Virgenes Municipal Water District and the Conejo Open Space Conservation Agency. The remaining populations are on private land, where they face considerable threats. Currently, less than 30% of the sites where this plant is found are protected (USFWS 2008b).

Nevin's barberry (FE)

Nevin's barberry (*Berberis nevinii*) is an evergreen shrub in the barberry family that is endemic to southern California. This species occurs in scattered locations in association with alluvial scrub, chaparral, coastal sage scrub, oak woodland, and/or riparian scrub or woodland (USFWS 2008b). In the study area it is located primarily in the Verdugo Mountains (CDFG 2012). Another detection in Griffith Park may be natural or introduced (Harris 2011). Threats include habitat loss and degradation due to development, brush clearing, road maintenance, nonnative invasive plants, and off-road vehicle use (USFWS 2008a).

Salt marsh bird's beak (FE)

Salt marsh bird's beak (*Chloropyron maritimum* ssp. *maritimum*) is a hemiparasitic annual found in coastal salt marshes with high tidal influxes in southern and central California and northern Baja California. Its distribution is naturally patchy, although it was historically found in inland salt marshes and a greater number of coastal marshes. Threats include climate change and sea level rise, invasive nonnative plants, recreational use, and issues with the genetics and breeding among the remaining small disjointed populations (USFWS 2009b). This species occurs in Santa Monica Mountains National Recreation Area at Mugu Lagoon (CDFG 2012).

Slender-horned spineflower (FE)

Slender-horned spineflower (*Dodecahema leptoceras*) is a small annual in the buckwheat family. Its habitat is rarely flooded, drought prone alluvial benches in southern California. Within the study area, populations occur in the Santa Clara watershed and multiple washes in the lower elevations of the San Gabriel Mountains. Remaining populations are primarily threatened by development projects, flood control activities, mining, and trash dumping (CDFG 2012, USFWS 2010c).

Santa Monica Mountains dudleya (FT)

Santa Monica Mountains dudleya (*Dudleya cymosa* ssp. *ovatifolia*) is found on sedimentary conglomerate rock on canyon bottoms and shaded slopes on the southern slopes of the Santa Monica Mountains. The three known populations are threatened by development, recreational activities, collectors, climate change, stochastic (random) events which could wipe out the small isolated populations, and wildfire suppression activities (USFWS 2009e).

Agoura Hills dudleya (FT)

Agoura Hills dudleya (*Dudleya cymosa* ssp. *agourensis*) is found on exposed west- to northwest-facing volcanic rock outcrops of the Santa Monica Mountains south of the Ventura Freeway in Los Angeles County. This taxa was initially listed as a population of *Dudleya cymosa* ssp. *ovatifolia* (Santa Monica

Mountains dudleya, see previous paragraph), but has since been identified as a distinct subspecies. There are six known occurrences which are considered part of one contiguous population. Threats are the same as those listed for Santa Monica Mountains dudleya. (CDFG 2012, USFWS 2009e).

Conejo dudleya (FT)

Conejo dudleya (*Dudleya parva*) is found on rock outcrops and soils derived from Miocene Conejo volcanics in coastal sage scrub habitats. It is endemic to the study area, growing on about one dozen sites within a discontinuous 10-mile stretch of the Conejo Mountain area centered on Montclef Ridge. This species is threatened by urban development activities, fire suppression, trampling, and illegal collection (USFWS 2009c).

Marcescent dudleya (FT)

Marcescent dudleya (*Dudleya cymosa* ssp. *marcescens*) is a succulent perennial which grows on sheer volcanic rock outcrops. All populations are found in a 15-mile range within SMMNRA, although 7 of the 13 known occurrences are on private land. This succulent is threatened by recreational use, development, and stochastic events (USFWS 2009d, CDFG 2012).

Verity's dudleya (FT)

Verity's dudleya (*Dudleya verity*) grows in a coastal sage scrub habitat on volcanic rock found along a discontinuous 4-mile range in Ventura County south of the Ventura Freeway on north facing slopes near Conejo Mountain. This species is endemic to the study area and is not found within SMMNRA. It is threatened by fire, development, collectors, and a quarry. Only a small portion of the plant's habitat is located on publicly owned land (Ventura County Flood Control District), the rest is in private ownership (USFWS 2009f, CDFG 2012).

San Fernando Valley spineflower (C)

San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) is a low-growing annual, which was presumed extinct until rediscovered at Laskey Mesa in the Simi Hills in 1999 (USFWS 2013c). It has since been observed at Newhall Ranch in the northern Santa Susana Mountains as well, an area partially within the study area (CDFG 2012). Although it was historically observed in gravelly soils (mostly in washes) in coastal sage scrub, today it occurs in sparsely vegetated areas with soils low in organic content. It is hypothesized that competition from native and nonnative species has excluded it from its previous habitat. Threats include development, cattle grazing, competition with nonnative species, and stochastic events that could eliminate the two remaining small, isolated populations (USFWS 2013c). It is currently listed as endangered by the State of California, but is still a candidate for federal listing.

Spreading navarretia (FT)

Spreading navarretia (*Navarretia fossalis*, also known as Moran's nosegay) was included in the USFWS consultation letter as a species of concern for the study area (USFWS 2011b). The California Natural Diversity Database and USFWS documents do not have any recorded observations of this species within the study area, but it has been found on Cruzan Mesa in the northern Santa Clara River watershed. There is a possibility that this species may be present in suitable habitat in unsurveyed portions of the study area (USFWS 2009h, CDFG 2012).

Ventura Marsh Milk-Vetch (FE)

Ventura marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*) was included in the USFWS consultation letter as a species of concern for the study area (USFWS 2011b). The California Natural Diversity Database and USFWS documents do not include any records for this species within the study area, but there is a possibility that it exists in unsurveyed areas. It has been reintroduced to five sites in the Oxnard area, and has historically been found on the coast to the north and south of the study area (USFWS 2010a, CDFG 2012).

FEDERALLY THREATENED AND ENDANGERED WILDLIFE

Arroyo toad (FE)

Arroyo toads (*Bufo californicus*) are found in seasonal pools and streams where natural disturbance is common. A highly sensitive species, arroyo toads are known to have one of the most specialized breeding habitat requirements of any amphibian found in California. Shallow breeding pools with slow moving water but sufficient flow to keep sediment in suspension are necessary for successful juvenile development. Outside of the breeding season, the arroyo toad is mostly terrestrial, utilizing a variety of upland habitats and burrowing into sandy soil during the day. The arroyo toad is threatened by habitat destruction and alteration from urban development, agriculture, water control infrastructure, fire, and nonnative species, as well as by the chytrid fungus. In 2009, the USFWS recommended downlisting the arroyo toad to threatened, since the known species range has expanded and conservation management managing known threats to this species, but this has not yet occurred (USFWS 2009a). Within the study area, critical habitat has been designated for two areas: Big Tujunga Creek in the San Gabriel Mountains and a section of the Upper Santa Clara River from Arrastre Canyon to Bee Canyon Creek.

Mountain yellow-legged frog (FE)

Mountain yellow-legged frogs (*Rana muscosa*) are diurnal frogs that occupy shaded streams with cool water from springs or snowmelt. Historically, the mountain yellow-legged frog occurred throughout southern California on both the coastal and desert slopes of the San Gabriel, San Bernardino, San Jacinto, and Palomar mountains. Current surveys show that the frog has disappeared from most of its historical range in southern California. Most of the remaining populations are located in isolated headwater streams in the San Gabriel Mountains (USFWS 2005). Designated critical habitat for the mountain yellow-legged frogs includes creeks in the San Gabriel Mountains east of the study area (USFWS 2006b).

California red-legged frog (FT)

During the wet season, California red-legged frogs (*Rana draytonii*) may be found in a wide variety of both riparian and upland habitats, but are restricted to heavily vegetated riparian areas during the dry season. They require submerged vegetation in ponds or deep, slow moving streams for breeding. Threats to the California red-legged frog include habitat degradation, off-road vehicles, reservoir construction, grazing, nonnative aquatic predators, and water quality. Critical habitat for the red-legged frog includes a portion of Upper Las Virgenes Creek watershed in the Simi Hills, which hosts the southernmost population of the federally threatened California red-legged frog (*Rana draytonii*). The main population of about 50 adults is found in the east fork of Las Virgenes Creek. Annual surveys have revealed evidence of successful reproduction (egg masses and tadpoles). Another population is located in Aliso Canyon in the northern San Gabriel Mountains. A project is currently underway to re-introduce red-legged frogs to historic stream habitat in the Santa Monica Mountains as well (USFWS 2010d, CDFG 2012).

California condor (FT)

California condors (*Gymnogyps californicus*) are among the largest and rarest birds in the world, with a wingspan of up to 9.5 feet. They are scavengers who feed primarily on large mammal carcasses. Suitable habitat for condors includes foothill rangeland and forest in remote areas where the birds can roost and nest in tall trees and on cliffs. After decades of decline, a population crash in the late 1980's left nine known individuals in the wild, all of whom were captured and enrolled in a captive breeding program. The first captive-reared birds were released into the wild in 1992, with additional releases over the following years. In 2012, 235 individuals were known in the wild, including approximately 60 successful breeding pairs, with an additional 169 individuals in captivity. The captive breeding program is ongoing and continues to release additional individuals into the wild. Major historic threats leading to the species' decline included direct killing and indirect poisoning from pest control, DDT, and lead shot. Today lead poisoning continues to be a major source of mortality. The Santa Susana and San Gabriel Mountains lie within the known range of the current California population of California condors (USFWS 2013a).

Coastal California gnatcatcher (FT)

The coastal California gnatcatcher (*Polioptila californica californica*) is an insect-eating non-migratory songbird that typically occurs in or near coastal sage scrub, alluvial fan sage scrub, southern coastal bluff scrub, and coastal sage chaparral. This subspecies is restricted to coastal southern California and northwestern Baja California, Mexico. Considered locally common in the mid-1940s, by the 1960s the gnatcatcher experienced a significant population decline in the United States. This has been attributed to widespread destruction of its habitat due to development and increased fire frequency. Critical habitat for the coastal California gnatcatcher includes the Santa Susana Mountains and parts of the western San Gabriel Mountains. Coastal California gnatcatchers have recently also been observed in the Upper Santa Clara River area and the northwestern Santa Monica Mountains (near California State University Channel Islands) where they have not previously been observed, which may indicate a range expansion (USFWS 2010b, USFWS 2011b).

California least tern (FE)

The California least tern (*Sterna antillarum browni*) is a migratory shorebird which breeds in a limited area along the California and Baja California coast. Terns forage, roost, nest, and migrate in colonies of around 25 breeding pairs. Nests consist of an indentation on barren ground near water. Feeding takes place in shallow estuaries and lagoons, and consists primarily of small fish. Since listing, the least tern population has gradually increased, but its habitat is still degraded throughout its range and threats from development, predation, invasive species, and natural disasters remain. The 2006 review of this species by USFWS recommended downlisting to federally threatened status, but this has not been implemented. This species has not been recorded within the study area, but suitable habitat may exist. It is known to nest along the coast north and south of the study area (USFWS 2006a).

Southwestern willow flycatcher (FE)

The southwestern willow flycatcher (*Empidonax trailii extimus*) is a small insectivorous migratory bird that makes its home in dense riparian areas in the southwestern United States. Nesting takes place primarily in thick riparian stands of willows or coast live oaks. Major threats to this species include nest parasitism by the brown-headed cowbird and habitat destruction from urban, recreational, agricultural, and water diversion development. The study area lies within the Coastal California Recovery Unit, where most populations are quite small. The only known population in the study area is found in Soledad Canyon, a tributary of the Upper Santa Clara River (USFWS 2002, CDFG 2012).

Least Bell's vireo (FE)

The least Bell's vireo (*Vireo bellii pusillus*) is a migratory songbird which inhabits riparian woodlands with tall trees and shorter thick shrubs. When the species was listed in 1986, loss of riparian habitat, urbanization, and predation by nonnative species were the primary threats. Since then, loss of riparian habitats has been halted and is beginning to be reversed through restoration projects. Although nest predation from nonnative cowbirds is a continuing issue, the least Bell's vireo population has increased ten-fold from 1986 to 2006, prompting the USFWS to recommend downgrading the species to threatened status (although this recommendation has not yet been implemented) (USFWS 2006c). Riparian areas within the study area contain suitable habitat for the least Bell's vireo, and designated critical habitat includes a stretch of the Santa Clara

River which skirts the study are just north of the Santa Susana Mountains. Within the study area, this species has primarily been observed in the San Gabriel Foothills, the Verdugo Mountains, and Griffith Park. In recent years, the least Bell's vireo has expanded its range, and was observed for the first time in the Conejo Mountain / Las Posas Hills area in 2009 and 2010 (CDFG 2012, USFWS 2011b).

Light-footed clapper rail (FE)

The light-footed clapper rail (*Rallus longirostris levipes*) is a non-migratory bird which inhabits tidal marshes and lagoons in southern California and northern Baja California. It feeds primarily on marsh invertebrates in shallow water and mudflats and nests in adjacent vegetation. Wholesale habitat destruction has ceased since this species was listed due to new laws and regulations, but ongoing threats include stochastic impacts and habitat degradation due to contaminant runoff, sea-level rise, and dredging. The light-footed clapper rail has been observed just outside the study area in Mugu Lagoon (USFWS 2009g).

Western snowy plover (FT)

The western snowy plover (*Charadrius alexandrinus nivosus*) is a small shorebird which nests on open, sandy beach habitat. The Pacific Coast population, defined as individuals who nest within 50 miles of the Pacific Coast of the United States and northern Mexico, was listed as threatened by the USFWS in 1993. Major threats include habitat destructions or modification from development and nonnative species, predation, and human disturbance to breeding birds (USFWS 2007a). Critical habitat has been established on several beaches along the southern California coast, including two within the study area.

Western yellow-billed cuckoo (C)

The western yellow-billed cuckoo (*Coccyzus americanus*) is a migratory songbird which requires large blocks of riparian habitat for breeding. Cottonwood or willow woodlands are preferred. Historically, it was locally common and widespread in California, Arizona, Oregon and Washington, and was found in scattered riparian areas throughout the rest of the western U.S. Today it is found throughout its historic range, but in fewer locations and with smaller population sizes. The primary threat to this species is loss or alteration of riparian habitat from development, flood control, agriculture, and nonnative invasive species. Western yellow-billed cuckoos have been observed along the lower Santa Clara River north of the study area (USFWS 2011d, CDFG 2012).

Southern steelhead (FE)

Southern steelhead (*Oncorhynchus mykiss*) are winter-run steelhead whose native habitat occurs in basins along the southern California coast. Steelhead require quality freshwater, marine, and estuarine ecosystems to support a healthy population, and therefore serve as an important indicator of watershed health. The study area is part of the Southern California Coast Evolutionarily Significant Unit (ESU), a distinctive group of Pacific salmon, steelhead, or sea-run cutthroat trout. The Southern California Coast ESU is at greater risk of extinction than any of the other 15 ESUs, and is the only federally endangered ESU. The major threat to southern steelhead is major habitat modification or blockage of streams by flood control, urban development, and other factors. Southern steelhead were historically reported from the Los Angeles River, but are now extirpated from this system. Steelhead still use the Santa Clara River and its tributaries for spawning and rearing, but critical habitat north and west of the study area. Topanga Canyon, Malibu Creek, and Arroyo Sequit contain the known poulations of steelhead within the study area; all three of these creeks are designated critical habitat (NOAA 2005, 2011).

Tidewater goby (FE)

The tidewater goby (*Eucyclogobius newberryi*) is a small fish which inhabits brackish lagoons and estuaries along the California coast. It is tolerant of a wide range of salinities, including pure seawater, but is mainly found in the less-saline upper reaches of estuaries. It primarily inhabits the lagoons and estuaries of major drainages with perennial freshwater flow. Individuals rarely leave their home estuary, but there is occasional movement, primarily between estuaries within 10 miles of each other. The genetics of this species is currently being studied, and may result in the division of this species into multiple new species. Major threats at the time of listing included habitat destruction and drought. Current regulations prohibit large-scale destruction of coastal habitat, but habitat alteration due to development, flood control, freshwater diversions, and human-caused breaching of coastal lagoons continues to be a threat. Since listing in 1994, the number of occupied lagoons and estuaries has doubled, indicating that the species may be more resilient to drought than previously thought. The USFWS has recommended potential downlisting of the tidewater goby to federally threatened status, pending further review of the species taxonomy (USFWS 2007b). Critical habitat for the tidewater goby has been designated in the study area in the estuaries and lagoons of Big Sycamore Canyon, Arroyo Sequit, Zuma Canyon, Malibu Creek, and Topanga Creek (USFWS 2013b).

Unarmored threespine stickleback (FE)

The unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) is a small, scaleless, native fish that resides in slow water creeks along the California coast. They were once common in Los Angeles-area watersheds, but today are restricted to just a handful of streams. Within the study area the stickleback is found in the Upper Santa Clara River and its tributary Soledad Canyon.Threats include habitat loss through stream channelization, increased water turbidity, introduction of nonnative competitors or predators, water pollution, steam flow alterations, hybridization with related species, and stochastic extinction (USFWS 2009i).

Santa Ana sucker (FT)

The Santa Ana sucker (*Catostomuss antaanae*) is endemic to the Los Angeles River, the San Gabriel River, and the Santa Ana River. Habitat preferences include clean, clear, and relatively cool perennial streams of varying width and depth with a mix of substrates including sand, gravel, cobble, and boulders. This species is now restricted to three noncontiguous populations in Big Tujunga Creek (within the study area), the San Gabriel River, and the Santa Ana River. A population is also located in the Santa Clara River watershed, but is not considered part of the listed species because it is presumed to be an introduced population and is hybridizing with another species. Threats to the Santa Ana sucker include urbanization, steam flow alterations , water diversions, dams, recreation, introduced predators, and population fragmentation and associated stochastic impacts (USFWS 2004, 2011c).

Riverside fairy shrimp (FE)

The Riverside fairy shrimp (*Streptocephalus woottoni*) is a small (under 1 inch) aquatic crustacean endemic to vernal and other ephemeral pools in southern California and northern Baja California. The species survives drying ephemeral water sources as a cyst capable of withstanding high temperatures and extreme drought. When water fills the pool, the cyst hatches and the shrimp mature and reproduce within 7 to 8 weeks. Drying of the pool is obligatory for the successful hatching of the cysts. Primary threats are human disturbance (particularly OHV use by recreational users, law enforcement, and military), pollution, and nonnative plants. Within the study area, Tierra Rejada Preserve, east of the Simi Valley, is designated critical habitat for this species (CDFG 2012, USFWS 2008c). Riverside fairy shrimp have also been observed at Golden Valley Ranch, south of the Upper Santa Clara River (LADRP 2012a).

Vernal pool fairy shrimp (FT)

Vernal pool fairy shrimp (*Branchinecta lynchi*) are small aquatic crustaceans whose habitat is limited to cool-water vernal pools and similar ephemeral water bodies in Oregon and California. Similar to the Riverside fairy shrimp, this species survives long dry periods as a cyst, hatching when water fills the pool. Primary threats include habitat alteration, destruction and fragmentation of populations due to agriculture, grazing, development, invasive plants, contaminant run-off, climate change, and altered hydrology. This species has been observed at Golden Valley Ranch on the south side of the Upper Santa Clara River Valley (USFWS 2007c, Juhasz 2011).

Conservancy fairy shrimp (FE)

Conservancy fairy shrimp (*Branchinecta conservatio*) was included in the USFWS consultation letter as a species of concern for the study area (USFWS 2011b). CNDDB and USFWS documents do not include any records for this species within the study area, but there is a possibility that it inhabits unsurveyed ephemeral pools. The nearest documented location of this species to the study area is in the Los Padres National Forest in Ventura County (CDFG 2012, USFWS 2012).

Mountain Plover

When the USFWS wrote their consultation letter in February 2011 (USFWS 2011b), the Mountain plover (*Charadrius montanus*) was included as a proposed species for federal designation, but this proposal has since been withdrawn (USFWS 2011a).

TABLE D-5: IMPERILED VEGETATION COMMUNITIES

Alliance Name	Global Rank	State Rank	Documented Study Area Locations
Bigcone Douglas-fir forest	G3	S3	Upper Santa Clara River
Black cottonwood forest	G5	S3	Santa Susana Mountains
Black willow thickets	G4	S3	Upper Santa Clara River
Bush monkeyflower scrub	G3	S3?	Verdugo Mountains/San Rafael Hills
California bay forest	G4	S3	Verdugo Mountains/San Rafael Hills, Griffith Park
California brittlebush scrub	G4	S3	Verdugo Mountains/San Rafael Hills, Upper Santa Clara River, San Gabriel Foothills, Griffith Park
California sycamore woodlands	G3	S3	Upper Santa Clara River, Verdugo Mountains/San Rafael Hills, Santa Monica Mountains, Griffith Park
California Walnut Woodland	G2	S2.1	Los Angeles River, Santa Monica Mountains, Santa Susana Mountains, Simi Hills
Chamise-white sage chaparral	G3	S3	Verdugo Mountains/San Rafael Hills, Upper Santa Clara River, San Gabriel Foothills, Griffith Park
Cismontane Alkali Marsh	G1	S1.1	Santa Susana Mountains
Clustered tarweed fields	G3?	S3?	Upper Santa Clara River
Coastal sage chaparral scrub	G3	S3.2	Santa Monica Mountains
Foothill needlegrass grassland	G3?	S3?	Upper Santa Clara River, Santa Susana Mountains
Fremont cottonwood forest	G4	S3	Upper Santa Clara River, Santa Susana Mountains
Freshwater swamp	G2	S2.2	Santa Monica Mountains
Giant wild rye grassland	G3	S3	Upper Santa Clara River, Santa Susana Mountains
Hairy leaf ceanothus chaparral	G3	S3	San Gabriel Foothills
Holly leaf cherry chaparral	G3/2	S3/2	Verdugo Mountains/San Rafael Hills, Upper Santa Clara River, San Gabriel Foothills, Griffith Park
Maritime succulent scrub	G2	S1.1	Santa Monica Mountains
Narrowleaf goldenbush scrub	G3	S3?	Upper Santa Clara River, Santa Susana Mountains
Nodding needlegrass grassland	G4	S3?	Upper Santa Clara River, Santa Susana Mountains
Purple needlegrass grassland	G4	S3?	Upper Santa Clara River, Santa Susana Mountains
Riversidian Alluvial Fan Sage Scrub	G1	S1.1	San Gabriel Mountains and Foothills, Upper Santa Clara River
Sawtooth goldenbush scrub	G3	S3	Santa Susana Mountains
Scalebroom scrub	G3	S3	Upper Santa Clara River, Santa Susana Mountains
Southern Coastal Salt Marsh	G2	S2.1	Santa Monica Mountains
Southern Cottonwood Willow Riparian Forest	G3	S3.2	Los Angeles River, San Gabriel Mountains, Upper Santa Clara River, Santa Susana Mountains
Southern Mixed Riparian Forest	G2	S2.1	San Gabriel Mountains and Foothills, Santa Susana Mountains
Southern Riparian Scrub	G3	S3.2	Conejo Mountain/Las Posas Hills, Santa Monica Mountains, Santa Susana Mountains, San Gabriel Mountains and Foothills
Southern Willow Scrub	G3	S2.1	Conejo Mountain/Las Posas Hills, Santa Susana Mountains, Upper Santa Clara River
Thick leaf yerba santa scrub	G3	S3	Upper Santa Clara River
Valley Needlegrass Grassland	G3	S3.1	Conejo Mountain/Las Posas Hills, Santa Monica Mountains, Simi Hills, Griffith Park
Valley Oak Woodland	G3	S2.1	Conejo Mountain/Las Posas Hills, Santa Monica Mountains, Santa Susana Mountains, Simi Hills
Walnut Forest	G1	S1.1	Arroyo Seco
White sage scrub	G4	S3	Verdugo Mountains/San Rafael Hills, Upper Santa Clara River, San Gabriel Foothills

Sources: CDFG 2012, LADRP 2012a

Notes: Global and state ranks indicate alliance imperilment, as measured by rarity, trends, and threats at both a global and state scale. Alliances with a global or state rank of 3 or below are considered highly imperiled. Rankings are determined under NatureServe's Hertiage Methodology (the accepted standard by the California Department of Fish and Game, California Native Plant Society, and the California Manual of Vegetation) (NatureServe 2013).

? indicates alliances for which there is insufficient data for a final ranking, but existing information points towards the rank listed.

This list includes communities named under both the California Manual of Vegetation (Sawyer et al. 2009) scheme and the California Natural Communities list (CDFG 2010). The California Natural Communities list is based on the California Manual of Vegetation, but some subtle differences in names exist. To the extent possible, duplicates from multiple sources have been removed. Community-level vegetation information was not available for many portions of the study area. Additional rare plant communities may be present.

TABLE D-6: RARE PLANTS

Scientific Name	Common Name	Federal Status	State Status	CNPS Ranking	Documented Study Area Locations
Arctostaphylos glandulosa ssp. *gabrielensis***	San Gabriel manzanita	None	None	1B.2	San Gabriel Mountains
*Astragalus brauntonii***	Braunton's milk-vetch	FE	None	1B.1	Santa Monica Mountains, Santa Susana Mountains, San Gabriel Mountains and Foothills
Atriplex coulteri	Coulter's saltbrush	None	None	1B.2	Santa Monica Mountains
Atriplex parishii	Parish's brittlescale	None	None	1B.1	Santa Monica Mountains
Atriplex serenana var. *davidsonii*	Davidson's saltscale	None	None	1B.2	Santa Monica Mountains
Baccharis plummerae ssp. *plummerae***	Plummer's baccharis	None	None	4.3	Santa Monica Mountains
*Baccharis malibuensis***	Malibu baccharis	None	None	1B.1	Santa Monica Mountains
*Berberis nevinii***	Nevin's barberry	FE	CE	1B.1	Verdugo Mountains / San Rafael Hills, Santa Monica Mountains, San Gabriel Mountains and Foothills
Calandrinia breweri	Brewer's calandrinia	None	None	4.2	Verdugo Mountains / San Rafael Hills, Santa Monica Mountains
California macrophylla	round-leaved filaree	None	None	1B.1	Conejo Mountain/Las Posas Hills, Santa Monica Mountains, Simi Hills, Arroyo Seco
*Calochortus catalinae***	Catalina mariposa-lily	None	None	4.2	Santa Monica Mountains, Upper Santa Clara River
Calochortus clavatus var. *clavatus**	club-haired mariposa lily	None	None	4.3	Upper Santa Clara River
Calochortus clavatus var. *gracilis***	slender mariposa-lily	None	None	1B.2	Santa Monica Mountains, Simi Hills, Santa Susana Mountains, Upper Santa Clara River, Verdugo Mountains / San Rafael Hills
*Calochortus fimbriatus**	Late-flowered mariposa lily	None	None	1B.2	Santa Susana Mountains
Calochortus palmeri var. *palmeri***	Palmer's mariposa-lily	None	None	1B.2	San Gabriel Mountains, Santa Susana Mountains
*Calochortus plummerae***	Plummer's mariposa-lily	None	None	4.2	Throughout study area
*Calystegia peirsonii***	Pierson's morning glory	None	None	4.2	Santa Susana Mountains
Camissonia lewisii	Lewis' evening-primrose	None	None	3	Santa Monica Mountains
*Castilleja gleasoni***	Mt. Gleason paintbrush	None	CR	1B.2	San Gabriel Mountains
Centromadia parryi ssp. *australis (=Hemizonia parryi* ssp. *australis)*	southern tarplant	None	None	1B.1	Conejo Mountain/Las Posas Hills, Santa Monica Mountains, San Gabriel Mountains and Foothills
Cercocarpus betuloides var. *blancheae***	island mountain-mahogany	None	None	4.3	Santa Monica Mountains
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	None	None	1B.1	Santa Monica Mountains
Chloropyron maritimum ssp. *maritimum*	salt marsh bird's-beak	FE	CE	1B.2	Mugu Lagoon
Chorizanthe parryi var. *fernandina***	San Fernando Valley spineflower	FC	CE	1B.1	Santa Susana Mountains, Simi Hills, San Gabriel Mountains and Foothills
Chorizanthe parryi var. *parryi***	Parry's spineflower	None	None	1B.1	Santa Monica Mountains, San Gabriel Mountains and Foothills
Cladium californicum	California sawgrass	None	None	2.2	Verdugo Mountains / San Rafael Hills
Convolvulus simulans	Clay bindweed	None	None	4.2	Santa Monica Mountains
*Deinandra minthornii ** (=Hemizonia minthornii)*	Santa Susana tarplant	None	CR	1B.2	Santa Monica Mountains, Santa Susana Mountains, Simi Hills
Delphinium parryi ssp. *blochmaniae***	dune larkspur	None	None	1B.2	Conejo Mountain/Las Posas Hills, Santa Monica Mountains
Didymodon norrisii	Norris' beard moss	None	None	2B.2	Santa Monica Mountains
Dithyrea maritima	beach spectaclepod	None	CT	1B.1	Santa Monica Mountains

TABLE D-6: RARE PLANTS (continued)

Scientific Name	Common Name	Federal Status	State Status	CNPS Ranking	Documented Study Area Locations
*Dodecahema leptoceras***	slender-horned spineflower	FE	CE	1B.1	Upper Santa Clara River, San Gabriel Mountains and Foothills
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	None	None	1B.1	Conejo Mountain/Las Posas Hills, Santa Monica Mountains, Simi Hills
Dudleya cymosa ssp. *agourensis***	Agoura Hills dudleya	FT	CSC	1B.2	Santa Monica Mountains
Dudleya cymosa ssp. *marcescens***	marcescent dudleya	FT	CR	1B.2	Santa Monica Mountains
Dudleya cymosa ssp. *ovatifolia***	Santa Monica dudleya	FT	None	1B.2	Santa Monica Mountains
*Dudleya multicaulis***	many-stemmed liveforever	None	None	1B.2	Santa Monica Mountains, Simi Hills, San Gabriel Mountains and Foothills
*Dudleya parva***	Conejo dudleya	FT	None	1B.2	Conejo Mountain/Las Posas Hills
*Dudleya verity***	Verity's dudleya	FT	None	1B.2	Conejo Mountain/Las Posas Hills, Santa Monica Mountains
*Eriogonum crocatum***	Conejo buckwheat	None	CR	1B.2	Conejo Mountain/Las Posas Hills, Santa Monica Mountains
*Galium grande***	San Gabriel bedstraw	None	None	1B.2	San Gabriel Mountains
Helianthus nuttallii ssp. *parishii***	Los Angeles sunflower	None	None	1A	San Gabriel Mountains
Horkelia cuneata var. *puberula***	mesa horkelia	None	None	1B.1	San Gabriel Foothills, Verdugo Mountains / San Rafael Hills, Arroyo Seco, Los Angeles River, Santa Monica Mountains
Imperata brevifolia	California satintail	None	None	2B.1	San Gabriel Mountains
Isocoma menziesii var. *decumbens*	decumbent goldenbush	None	None	1B.2	Santa Monica Mountains
*Juglans californica***	California black walnut	None	None	4.2	Verdugo Mountains / San Rafael Hills, Santa Monica Mountains , San Gabriel Foothills, Santa Susana Mountains
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None	None	1B.2	Santa Monica Mountains, Simi Hills, Arroyo Seco
*Lepechinia fragrans***	fragrant pitcher sage	None	None	4.2	Santa Monica Mountains
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	None	None	4.3	San Gabriel Mountains and Foothills, Griffith Park
Lilium humboldtii ssp. *ocellatum***	ocellated Humboldt lily	None	None	4.2	Upper Santa Clara River
*Linanthus concinnus***	San Gabriel linanthus	None	None	1B.2	San Gabriel Mountains
*Malacothamnus davidsonii**	Davidson's bushmallow	None	None	1B.2	San Gabriel Mountains and Foothills, Verdugo Mountains / San Rafael Hills, Santa Susana Mountains
Monardella hypoleuca ssp. *hypoleuca***	white-veined monardella	None	None	1B.3	Santa Monica Mountains
*Muhlenbergia californica***	California muhly	None	None	4.3	San Gabriel Mountains
Nama stenocarpum	mud nama	None	None	2B.2	Santa Monica Mountains
*Navarretia ojaiensis***	Ojai navarretia	None	None	1B.1	Santa Monica Mountains
*Navarretia prostrata**	prostrate vernal pool navarretia	None	None	1B.1	Los Angeles River
*Nolina cismontana***	Chaparral nolina	None	None	1B.2	Santa Susana Mountains, Simi Hills
Opuntia basilaris var. *brachyclada***	short-joint beavertail	None	None	1B.2	San Gabriel Mountains and Foothills, Upper Santa Clara River
Orcuttia californica	California Orcutt grass	FE	CE	1B.1	Santa Susana Mountains, Upper Santa Clara River, Santa Monica Mountains, Simi Hills, Conejo Mountain / Las Posas Hills
Orobanche valida ssp. *valida**	Rock Creek broomrape	None	None	1B.2	San Gabriel Mountains
*Pentachaeta lyonii***	Lyon's pentachaeta	FE	CE	1B.1	Santa Monica Mountains, Conejo Mountains / Las Posas Hills
*Phacelia hubbyi***	Hubby's phacelia			4.2	Santa Monica Mountains, Griffith Park

TABLE D-6: RARE PLANTS (continued)

Scientific Name	Common Name	Federal Status	State Status	CNPS Ranking	Documented Study Area Locations
Piperia cooperi	Cooper's rein orchid	None	None	4.2	Verdugo Mountains / San Rafael Hills, Griffith Park
*Piperia michaelii**	Michael's rein orchid	None	None	4.2	Verdugo Mountains / San Rafael Hills
Pseudognaphalium leucocephalum	white rabbit-tobacco	None	None	2B.2	San Gabriel Mountains and Foothills, Verdugo Mountains / San Rafael Hills, Arroyo Seco
Quercus durata var. *gabrielensis***	San Gabriel Mountains leather oak	None	None	4.2	Verdugo Mountains / San Rafael Hills, Griffith Park
Senecio aphanactis	Chaparral ragwort	None	None	2B.2	Santa Monica Mountains, Conejo Mountain / Las Posas Hills
Sidalcea neomexicana	salt spring checkerbloom	None	None	2B.2	Santa Monica Mountains
*Stylocline masonii**	Mason's neststraw	None	None	1B.1	Upper Santa Clara River
Suaeda esteroa	estuary seablite	None	None	1B.2	Point Mugu
*Symphyotrichum greatae***	Greata's aster	None	None	1B.3	San Gabriel Mountains and Foothills, Arroyo Seco
Thelypteris puberula var. *sonorensis*	Sonoran maiden fern	None	None	2B.2	San Gabriel Mountains and Foothills, Santa Monica Mountains
*Tortula californica**	California screw moss	None	None	1B.2	Santa Monica Mountains

Sources: CDFG 2012, LADRP 2000, Cooper 2010, NASA 2013, pers. comm. Tarja Sagar 2014, Soza et al. in press.

Status codes:
* Endemic to California
** Endemic to southern California (Los Angeles, Ventura, San Bernardino, Riverside, Imperial, Orange, San Diego, Santa Barbara, Kern, and San Luis Obispo Counties)
CE=State Endangered
CT= State Threatened
CR= State Listed Rare
FE = Federal Endangered
FT = Federal Threatened
CNPS=California Native Plant Society. The California Native Plant society has developed an inventory of rare and endangered plants that are native to California.
1B= Plants considered rare, threatened, or endangered in California and elsewhere. This includes all plants eligible for state listing and those that must be considered while preparing CEQA documents.
2= Plants considered rare in California but more common elsewhere. This includes all plants eligible for state listing and those that must be considered while preparing CEQA documents.
3= More information is need for this plant
4= Limited distribution (Watch List)
The number after the decimal indicates the degree of threat currently facing this species, with 0.1 being the most threatened.

TABLE D-7: RARE ANIMALS

Scientific Name	Common Name	Federal Status	State Status	Documented Study Area Locations
Amphibians				
Anaxyrus californicus	arroyo toad	Endangered	SSC	San Gabriel Mountains, Upper Santa Clara River, Simi Hills
Rana draytonii	California red-legged frog	Threatened	SSC	San Gabriel Mountains, Simi Hills
Rana muscosa	southern mountain yellow-legged frog	Endangered	Endangered	San Gabriel Mountains and Foothills
Spea hammondii	western spadefoot	None	SSC	Santa Susana Mountains, Upper Santa Clara River
Taricha torosa	Coast Range newt	None	SSC	San Gabriel Mountains and Foothills, Santa Monica Mountains, Simi Hills
Reptiles				
Anniella pulchra pulchra	silvery legless lizard	FSS	SSC	Upper Santa Clara River, Verdugo Mountains / San Rafael Hills, Simi Hills, Los Angeles River, Santa Monica Mountains
Charina trivirgata	rosy boa	FSS	None	Upper Santa Clara River, San Gabriel Mountains
Diadophis punctatus modestus	San Bernardino ringneck snake	FSS	None	Santa Monica Mountains, Upper Santa Clara River, Simi Hills
Emys marmorata	western pond turtle	FSS	SSC	Conejo Mountain/Las Posas Hills, Santa Monica Mountains, San Gabriel Mountains and Foothills, Verdugo Mountains/San Rafael Hills, Simi Hills
Lampropeltis zonata (pulchra)	California mountain kingsnake (San Diego population)	FSS	SSC	Santa Monica Mountains, Upper Santa Clara River
Phrynosoma blainvillii	coast horned lizard	FSS	SSC	Throughout study area
Salvadora hexalepis virgultea	coast patch-nosed snake	None	SSC	Santa Monica Mountains
Thamnophis hammondii	two-striped garter snake	None	SSC	San Gabriel Mountains, Upper Santa Clara River, Santa Susana Mountains, Conejo Mountains/Las Posas Hills, Santa Monica Mountains
Birds				
Accipiter cooperii	Cooper's hawk	None	WL	Throughout study area
Accipiter striatus	sharp-shinned hawk	None	WL	Throughout study area
Agelaius tricolor	tricolored blackbird	BCC	SSC	Simi Hills (no recent records)
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	None	WL	Upper Santa Clara River, Simi Hills, Santa Susana Mountains, Santa Monica Mountains
Aquila chrysaetos	golden eagle	BCC	FP, WL	San Gabriel mountains, Santa Monica Mountains, Simi Hills, Santa Susana Mountains
Artemisiospiza belli belli	Bell's sage sparrow	BCC	WL	Upper Santa Clara River
Asio otus	long-eared owl	None	SSC	Upper Santa Clara River
Athene cunicularia	burrowing owl	BCC	SSC	Santa Monica Mountains, Simi Hills, Santa Susana Mountains
Buteo swainsoni	Swainson's hawk	BCC, FSS	Threatened	Santa Monica Mountains, Simi Hills, Upper Santa Clara River
Chaetura vauxi	Vaux's swift	None	SSC	Upper Santa Clara River, found throughout study area during migration
Circus cyaneus	northern harrier	None	SSC	Santa Susana Mountains, Santa Monica Mountains, Simi Hills
Coccyzus americanus occidentalis	western yellow-billed cuckoo	Candidate	Endangered	Santa Susana Mountains, Santa Monica Mountains
Cypseloides niger	black swift	BCC	SSC	San Gabriel Mountains
Dendroica petechia brewsteri	yellow warbler	BCC	SSC	Santa Susana Mountains

TABLE D-7: RARE ANIMALS (continued)

Scientific Name	Common Name	Federal Status	State Status	Documented Study Area Locations
Birds (continued)				
Elanus leucurus	white-tailed kite	None	FP	Conejo Mountain/Las Posas Hills, Upper Santa Clara River, Santa Monica Mountains, Santa Susana Mountains
Empidonax traillii extimus	southwestern willow flycatcher	Endangered	Endangered	Upper Santa Clara River, Santa Susana Mountains
Eremophila alpestris actia	California horned lark	None	WL	Santa Monica Mountains, Santa Susana Mountains, Simi Hills
Falco columbarius	merlin	None	WL	Throughout study area
Falco mexicanus	prairie falcon	BCC	WL	Throughout study area
Falco peregrinus anatum	American peregrine falcon	BCC	WL	Throughout study area
Haliaeetus leucocephalus	bald eagle	BCC, FSS	Endangered	Santa Monica Mountains
Icteria virens	yellow-breasted chat	None	SSC	Santa Susana Mountains
Lanius ludovicianus	loggerhead shrike	BCC	SSC	Santa Monica Mountains, Santa Susana Mountains, Simi Hills
Ixoblychus exilis hesperis	Western least bittern	BCC	SSC	Santa Clara River
Polioptila californica californica	coastal California gnatcatcher	Threatened	SSC	Conejo Mountains/Las Posas Hills, Upper Santa Clara River, Simi Hills, Verdugo Mountains/San Rafael Hills
Riparia riparia	bank swallow	None	Threatened	Santa Monica Mountains
Strix occidentalis occidentalis	California spotted owl	BCC, FSS	SSC	Upper Santa Clara River
Vireo bellii pusillus	least Bell's vireo	Endangered	Endangered	Santa Monica Mountains, Conejo Mountain/Las Posas Hills, Los Angeles River, Arroyo Seco, San Gabriel Mountains and Foothills, Santa Susana Mountains
Mammals				
Antrozous pallidus	pallid bat	FSS	SSC	Upper Santa Clara River, Santa Monica Mountains, Simi Hills, Upper Santa Clara River
Bassariscus astutus	ringtail cat	None	FP	Upper Santa Clara River, Santa Susana Mountains, Santa Monica Mountains
Euderma maculatum	spotted bat	None	SSC	Santa Monica Mountains
Eumops perotis californicus	western mastiff bat	None	SSC	Santa Susana Mountains, Los Angeles River, Verdugo Mountains/San Rafael Hills, Simi Hills, Santa Monica Mountains
Lasiurus blossevillii	western red bat	FSS	SSC	Santa Monica Mountains
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None	SSC	San Gabriel Foothills, Santa Monica Mountains, Santa Susana Mountains
Macrotus californicus	California leaf-nosed bat	FSS	SSC	Santa Susana Mountains, Simi Hills
Neotoma lepida intermedia	San Diego desert woodrat	None	SSC	Conejo Mountains/Las Posas Hills, Santa Monica Mountains, Santa Susana Mountains, Simi Hills, Upper Santa Clara River
Onychomys torridus ramona	southern grasshopper mouse	None	SSC	Verdugo Mountains/San Rafael Hills, Upper Santa Clara River
Taxidea taxus	American badger	None	SSC	Santa Monica Mountains
Fish				
Catostomus santaanae	Santa Ana sucker	Threatened	SSC	San Gabriel Mountains and Foothills, Upper Santa Clara River
Eucyclogobius newberryi	tidewater goby	Endangered	SSC	Santa Monica Mountains
Gasterosteus aculeatus williamsoni	unarmored threespine stickleback	Endangered	Endangered	Upper Santa Clara River
Gila orcuttii	arroyo chub	FSS	SSC	Upper Santa Clara River, Santa Monica Mountains, Verdugo Mountains/San Rafael Hills, Conejo Mountain/Las Posas Hills

TABLE D-7: RARE ANIMALS (continued)

Scientific Name	Common Name	Federal Status	State Status	Documented Study Area Locations
Fish (continued)				
Oncorhynchus mykiss irideus	southern steelhead - southern California DPS	Endangered	SSC	Santa Monica Mountains
Rhinichthys osculus ssp. *3*	Santa Ana speckled dace	None	SSC	San Gabriel Mountains and Foothills
Invertebrates				
Streptocephalus woottoni	Riverside fairy shrimp	Endangered	None	Simi Hills
Branchinecta lynchi	Vernal pool fairy shrimp	Threatened	None	Upper Santa Clara River

Sources: CDFG 2012, CDFG 2011, LADRP 2012a, NASA 2013, pers. comm. Katy Delaney 2014, pers. comm. David Magney 2011.

Status codes:

BCC: USFWS Bird of Conservation Concern. This list identifies bird species at risk of listing under the Endangered Species Act if additional conservation actions are not taken.

SSC: CDFW Species of Special Concern. The California Department of Fish and Wildlife applies this status to animal species not listed under the federal and California Endangered Species Acts that are declining at a rate that might require listing or have historically low population counts.

FP: CDFW Fully Protected. The Fully Protected classification was California's first effort to protect rare species. Most species have since been listed under state and/or federal endangered species acts, but a few remain on this list.

WL: CDFW Watch List. This list identifies bird species of concern which were previously listed as a Species of Special Concern or federal or state Threatened or Endangered species, but are no longer on any of these lists, or which are on the Fully Protected list.

FSS: USFS Sensitive. The U.S. Forest Service applies this status to species which are not listed or proposed to be listed under the Federal Endangered Species Act, but whose population viability is a concern due to reduction of population numbers, density, or habitat.

Note: Species listed in this table only include those listed on the USFWS and CFDW threatened and endangered species lists, the CDFW species of special concern, fully protected, and watch lists, and the USFS sensitive species lists. The following invertebrates found in the study area are not on any of these lists but are considered imperiled on a global (G), national (N), or state (S) scale using the NatureServe Heritage Methodology (NatureServe 2013). The number 1 following the letter indicates critical imperilment, 2 indicates imperilment, and 3 indicates vulnerability.

- *Helminthoglypta venturensis* (Ventura shoulderband) G1QN1
- *Helminthoglypta traskii traskii* (Trask or Peninsular Range shoulderband) G1G2T1S1
- *Helminthoglypta traskii pacoimensis* (Pacoima shoulderband) G1T1S1
- *Helminthoglypta tudiculata convicta* (southern shoulderband) G2G3N2N3
- *Helminthoglypta petricola sangabrielis* (San Gabriel shoulderband) G1
- *Helminthoglypta fontiphila* (Soledad shoulderband) G1S1
- *Coelus globosus* (globose dune beetle) G1S1
- *Carolella busckana* (Busck's gallmoth) G1G3
- *Danaus plexippus* (Monarch butterfly) G5S3
- *Aglaothorax longipennis* (Santa Monica shieldback katydid) G1G2S1S2
- *Trimerotropis occidentiloides* (Santa Monica grasshopper) G1G2S1S2

Inventory of Cultural and Archeological Resources within the Rim of the Valley Corridor that are Listed or Eligible to be Listed in the National Register of Historic Places

TABLE D-8: CULTURAL RESOURCES RELATED TO THE PREHISTORIC PERIOD (Prior to 1542)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
Burro Flats Painted Cave (CA-VEN-1072)	Burro Flats Painted Cave (CA-VEN-1072)	Burro Flats Painted Cave (CA-VEN-1072)	Burro Flats Painted Cave (CA-VEN-1072)
Big Tujunga Prehistoric Archeological Site (CA-LAN-167)	San Gabriel Mountain Foothills	Peopling Places	NRST2
Calleguas Creek (CA-VEN-110)	Santa Monica Mountains	Peopling Places	NR-local (1976)
Humaliwo (CA-LAN-264)	Santa Monica Mountains	Peopling Places	NR-state (1976)
Saddle Rock Pictograph Site (CA-LAN-717)	Santa Monica Mountains	Peopling Places	NHL Eligible (1990)
Talepop (CA-LAN-229)	Santa Monica Mountains	Peopling Places	Under evaluation
Decker Canyon Site Complex (CA-LAN-1326, 1327, 1328)	Santa Monica Mountains	Peopling Places	NRST2
Farpoint Site (CA-LAN-451)	Santa Monica Mountains	Peopling Places	NRST2
Old Santa Susana Stage Road (Prehistoric Village Site, Rockshelter, and Petroglyphs) (CA-LAN-448/449)	Simi Hills/Santa Susana Mountains	Peopling Places	NR-local (1974)
Angeles National Forest Native American prehistoric resources determined eligible: • Alimony Earth Oven #2 (CA-LAN-2129 • Burial Site at Chilao Flats (CA-LAN-1010), • Chilao Creek Midden (CA-LAN-1055) • House Pits at Lower Chilao (CA-LAN-1051) • Lower Alder Creek Terrace Site (CA-LAN-3032) • Old Shortcut Road Prehistoric Site #1 (CA-LAN-3031) • Messenger Campground (CA-LAN-3028) • Sims-Mayer Chilao (CA-LAN-3151) • Snow Saddle (CA-LAN-2123) • Upper Big Tujunga Site (CA-LAN 1359/2249) • Lone Manzanita/Werner Camp (CA-LAN-2807) • Nighthawk Site (CA-LAN-1946)	San Gabriel Mountains	Peopling Places	NRST2

Sources: National Register of Historic Places Database (accessed 2012, 2013); Office of Historic Preservation Record Search, Central Coast Information Center (June 2011); Angeles National Forest, Heritage Resources Database (2011).

Notes: Additional resources in the study area: Hundreds of additional archeological sites have been identified but most have not yet been evaluated.

Status codes: NHL = National Historic Landmark; NR = National Register; NRST2 = Determined eligible for listing in the National Register of Historic Places or California Register

TABLE D-9: CULTURAL RESOURCES RELATED TO THE SPANISH PERIOD (1542-1822)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
Portola Trail Campsite (no. 1), Elysian Park	Los Angeles River	Peopling Places	SHL
Juan Bautista de Anza National Historic Trail	Los Angeles River, Santa Monica Mountains	Peopling Places, Developing the American Economy	NHT (1990)
El Pueblo de Los Angeles Historical Monument (1781) Los Angeles Plaza (1781) Avila Adobe (1818) Plaza Church/ Nuestra Señora La Reina De Los Angeles (1822)	Los Angeles River	Peopling Places, Expressing Cultural Values	NR-state (1972)/SHL
Mission San Fernando Rey De Espana (Convento Building)	San Fernando Valley	Peopling Places, Expressing Cultural Values	NR-state (1988)

Sources: National Register of Historic Places Database (accessed 2012, 2013); Office of Historic Preservation Record Search, Central Coast Information Center (June 2011)

Status codes:
NHT = National Historic Trail; NR = National Register; SHL = California State Historic Landmark.

TABLE D-10: CULTURAL RESOURCES RELATED TO THE MEXICAN PERIOD (1822-1848)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
El Scorpion Ranch	Simi Hills	Peopling Places	Five Views (CDRP 1988)
Old Spanish National Historic Trail	Los Angeles River, San Gabriel Mountain foothills	Developing the American Economy	NHT (2002)
Rancho San Rafael - Catalina Verdugo Adobe; Catalina Adobe	Verdugo Mountains/San Rafael Hills	Peopling Places	NR- state (1976)/SHL
Sepulveda Adobe	Santa Monica Mountains	Peopling Places	NRST2
Oak of the Golden Dream	San Gabriel Mountains	Developing the American Economy	SHL
Simi Adobe-Strathearn House	Simi Valley/Hills	Developing the American Economy	NR- state (1978)/SHL
Rancho El Encino	Los Angeles River	Peopling Places, Developing the American Economy	NR-state (1971)/SHL
El Pueblo de Los Angeles Historical Monument - Lugo Adobe (1840s)	Los Angeles River	Peopling Places	NR-state (1972)/SHL
Gen. Andres Pico Oak Tree Camp Site, Oak Of Peace (1847)	Verdugo Mountains/San Rafael Hills	Shaping the Political Landscape	NRST3
Campo De Cahuenga (1847) - Treaty of Cahuenga	Los Angeles River	Shaping the Political Landscape	SHL
Rancho Camulos (1853)	North of study area (Piru)	Peopling Places, Expressing Cultural Values	NHL (1996)

Sources: National Register of Historic Places Database (accessed 2012, 2013); Office of Historic Preservation Record Search, Central Coast Information Center (June 2011); LSA Associates 2011, CDRP 1988.

Status codes: NHL = National Historic Landmark; NHT = National Historic Trail; NR = National Register; NRST2 = Determined eligible for listing in the national register or California Register; NRST3 = Appears Eligible for NR as an individual property through survey evaluation; SHL = California State Historic Landmark, Five Views = Site included in the California State Historic Preservation survey of ethnic historic site survey.

TABLE D-11: CULTURAL RESOURCES RELATED TO THE AMERICAN PERIOD (1848-Present)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
American Settlement			
El Pueblo de Los Angeles Historical Monument • Pico House (Hotel) (1869-70) • Merced Theatre (1870) • Old Plaza Firehouse (1884) • Los Angeles Chinese American Community (Five Views) • Site of the Los Angeles Massacre (1871)	Los Angeles River	Peopling Places, Expressing Cultural Values	NR-state (1972)/SHL
Minnie Hill Palmer Residence	Simi Hills	Creating Social Institutions and Movements	NR-local (1979)
Agriculture			
Rancho Sierra Vista (1936)	Santa Monica Mountains	Developing the American Economy	NRST3
Bothwell Ranch	Santa Monica Mountains/ Tarzana	Developing the American Economy	NRST3/SurveyLA
Civic/Institutional			
Fire Station No. 76	Santa Monica Mountains	Creating Social Institutions and Movements	NRST3/SurveyLA
Fire Station #84	Santa Monica Mountains	Creating Social Institutions and Movements	NRST3/SurveyLA
Department of Water and Power Coldwater Canyon Pumping Plant	Santa Monica Mountains	Creating Social Institutions and Movements	NRST3/SurveyLA
Department of Water and Power Laurel Canyon Pumping Plant	Santa Monica Mountains	Creating Social Institutions and Movements	NRST3/SurveyLA
Department of Water and Power Distributing Station No. 29	Santa Monica Mountains	Creating Social Institutions and Movements	NRST3/SurveyLA
Clubs and organizations			
Beverly Hills Women's Club	Los Angeles	Creating Social Institutions and Movements	NR-local (2006)
Standard Oil Company; Woman's Building (1914)	Los Angeles River	Creating Social Institutions and Movements	NRST3/SurveyLA
Religious institutions			
Chatsworth Community Church	Los Angeles	Creating Social Institutions and Movements	NRST3
Chautauqua Conference Grounds; Presbyterian Conference Grounds	Santa Monica Mountains/Pacific Palisades	Creating Social Institutions and Movements, Expressing Cultural Values	NRST3/SurveyLA
Pisgah Housing District	Los Angeles	Creating Social Institutions and Movements	NR-local (2007)
St. Saviors Chapel	Los Angeles	Creating Social Institutions and Movements	NRST3
First Jewish site in Los Angeles (Chavez Ravine)	Los Angeles River	Creating Social Institutions and Movements, Expressing Cultural Values	SHL
Recreation and Culture			
Angeles National Forest	San Gabriel Mountains	Creating Social Institutions and Movements, Transforming the Environment	SHL
Crestwood Hills Recreation Center	Santa Monica Mountains	Developing the American Economy	NRST3/SurveyLA
Encino Park	Los Angeles River	Creating Social Institutions and Movements	NRST3
Griffith Park	Los Angeles	Creating Social Institutions and Movements	NRST3
Hansen Dam	Verdugo Mountains	Creating Social Institutions and Movements	NRST3/SurveyLA
Pasadena Arroyo Parks and Recreation District	Arroyo Seco	Creating Social Institutions and Movements	NR-local (2008)

TABLE D-11: CULTURAL RESOURCES RELATED TO THE AMERICAN PERIOD (1848-Present) (continued)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
Recreation and Culture (continued)			
Pasadena Winter Gardens	Arroyo Seco	Creating Social Institutions and Movements	NRST3
Peter Strauss Ranch	Santa Monica Mountains	Creating Social Institutions and Movements	NRST2
The Rose Bowl	Arroyo Seco	Creating Social Institutions and Movements	NHL (1987)
Wattles Mansion And Gardens	Los Angeles	Creating Social Institutions and Movements	NRST3
Santa Monica Looff Hippodrome	Santa Monica	Creating Social Institutions and Movements	NHL (1987)
Sepulveda Basin	Los Angeles River	Creating Social Institutions and Movements	NRST3/SurveyLA
Sportsmen's Lodge	Los Angeles River/San Fernando Valley	Creating Social Institutions and Movements	NRST3/SurveyLA
Sportsmen's Lodge	Los Angeles River/San Fernando Valley	Creating Social Institutions and Movements	NRST3/SurveyLA
Education			
World War I Memorial Flagstaff	Pasadena	Creating Social Institutions and Movements	NRST3
Community Magnet Charter School	Santa Monica Mountains (Bel Air)	Creating Social Institutions and Movements	NRST3/SurveyLA
Florence Nightingale Middle School	Los Angeles River	Creating Social Institutions and Movements	NRST3/SurveyLA
Gaspar de Portola Middle School	Santa Monica Mountains (Tarzana)	Creating Social Institutions and Movements	NRST3/SurveyLA
Roscomare Road Elementary School	Santa Monica Mountains (Bel Air)	Creating Social Institutions and Movements	NRST3/SurveyLA
Visual and Performing Arts/ Entertainment			
Abbey San Encino (Eldstane Abbey)	Los Angeles	Expressing Cultural Values	NRST3
Arnold Schoenberg Residence	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
Bella Lewitzky Home and Dance Studio	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
Bookstar/Studio City Theater	Los Angeles River/San Fernando Valley	Expressing Cultural Values	NRST3/SurveyLA
CBS Studio Center	Los Angeles River /San Fernando Valley	Expressing Cultural Values	NRST3/SurveyLA
Dawnridge	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
Hollywood Boulevard Commercial & Entertainment District	Los Angeles	Expressing Cultural Values	NR-national (1985)
Hollywood Bowl	Santa Monica Mountains	Expressing Cultural Values	NRST2
Hollywood United Methodist Church	Los Angeles	Expressing Cultural Values	NRST2
Joel McCrea Ranch	Thousand Oaks	Expressing Cultural Values	NR-national (1997)
Liberace House	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
The Mansion	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
Paramount Ranch Cultural Landscape	Santa Monica Mountains	Expressing Cultural Values	NRST2
Theatre West	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
The Judson Studios	Arroyo Seco	Expressing Cultural Values	NR-state (1999)
Upper Franklin Canyon Park Historic District	Santa Monica Mountains	Expressing Cultural Values	NR-state (1999)
Will Rogers House	Pacific Palisades	Expressing Cultural Values	NR-national (1971), SHL
William S. Hart County Park	Santa Susana Mountains (Santa Clarita Valley)	Expressing Cultural Values	NRST2

TABLE D-11: CULTURAL RESOURCES RELATED TO THE AMERICAN PERIOD (1848-Present) (continued)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
Architecture, Landscape Architecture, and Urban Design (city locations provided for sub-geographic area)			
10714-10718 1/2 Aqua Vista St Residential Court	Santa Monica Mountains/Studio City	Expressing Cultural Values	SurveyLA/NRST3
1694 Putney Rd	Pasadena	Expressing Cultural Values	NRST3
1880-2160 Canyon Close Rd. (Locate the district this could be a part of)	Pasadena	Expressing Cultural Values	NRST3
1900-2120 N Altadena Rd.	Pasadena	Expressing Cultural Values	NRST3
1955-2115 Fox Ridge Dr.	Pasadena	Expressing Cultural Values	NRST3
213 W. Avenue 37	Los Angeles	Expressing Cultural Values	NRST3
414 Mooresque St	Pasadena	Expressing Cultural Values	NRST3
421 Mooresque St	Pasadena	Expressing Cultural Values	NRST3
5944 Hayes Ave	Los Angeles	Expressing Cultural Values	NRST3
5960 Hayes Ave	Los Angeles	Expressing Cultural Values	NRST3
623 W. Avenue 26	Los Angeles	Expressing Cultural Values	NRST3
A. A. Mitchell House, William Dieterle House	South Pasadena	Expressing Cultural Values	NRST2
Adamson House	Malibu	Expressing Cultural Values	NR-state (1977), SHL
Agnes Avenue Residential Historic District	Los Angeles River/Studio City	Expressing Cultural Values	NRST3/SurveyLA
Andalusia	Los Angeles	Expressing Cultural Values	NR-local (2003)
Azalia Drive Residential Historic District	Santa Monica Mountains/ Tarzana	Expressing Cultural Values	NRST3/SurveyLA
Batchelder House, Garage, Studio/Workshop	Pasadena	Expressing Cultural Values	NR-national (1972), SHL
Bel Air Gardens	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
Bernheimer Bldgs, Castle Yamashiro	Los Angeles	Expressing Cultural Values	NRST3
Boathouse Thematic Group	Santa Monica Mountains/ Cahuenga	Expressing Cultural Values	NRST3/SurveyLA
Briarcliff Manor Residential Historic District	Santa Monica Mountains/Studio City	Expressing Cultural Values	NRST3/SurveyLA
Bridge House Historic District	Santa Monica Mountains/ Cahuenga	Expressing Cultural Values	NRST3/SurveyLA
C. E. Toberman Estate	Hollywood	Expressing Cultural Values	NR-local (1983)
Caballero Hills Residential Historic District	Santa Monica Mountains/ Tarzana	Expressing Cultural Values	NRST3/SurveyLA
Cannon Electric Development Co., Plant #1 (1926)	Los Angeles River	Expressing Cultural Values	NRST3
Carroll Avenue, 1300 Block	Los Angeles	Expressing Cultural Values	NR-state (1976)
Casa De Adobe	Los Angeles	Expressing Cultural Values	NRST3
Case Study House #3	Los Angeles	Expressing Cultural Values	NRST3
Case Study House #9 (Entenza House)	Los Angeles	Expressing Cultural Values	NR-local (2013)
Case Study House #10	Pasadena	Expressing Cultural Values	NR-local (2013)
Case Study House #11	Los Angeles	Expressing Cultural Values	NRST3
Case Study House #15	La Canada Flintridge	Expressing Cultural Values	NRST3
Case Study House #16	Los Angeles	Expressing Cultural Values	NR-local (2013)
Case Study House #17	Los Angeles	Expressing Cultural Values	NRST3
Case Study House #18	Los Angeles	Expressing Cultural Values	NR-local (2013)
Case Study House 1950	Pacific Palisades	Expressing Cultural Values	NRST3
Case Study House #20	Pacific Palisades	Expressing Cultural Values	NRST3
Case Study House #21	Los Angeles	Expressing Cultural Values	NR-local (2013)
Case Study House #22	Los Angeles	Expressing Cultural Values	NR-local (2013)
Case Study House #28	Thousand Oaks	Expressing Cultural Values	NR-local (2013)

TABLE D-11: CULTURAL RESOURCES RELATED TO THE AMERICAN PERIOD (1848-Present) (continued)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
Architecture, Landscape Architecture, and Urban Design (city locations provided for sub-geographic area) (continued)			
Charles B. Wellman Residence	Los Angeles	Expressing Cultural Values	NRST2
Chateau Des Fleurs	Los Angeles	Expressing Cultural Values	NRST3
Chateau Marmont	West Hollywood	Expressing Cultural Values	NRST3
Christian Anderson House	Los Angeles	Expressing Cultural Values	NRST3
Clapp House	Pasadena	Expressing Cultural Values	NRST3
Crowell House	Pasadena	Expressing Cultural Values	NRST3
Dahlstrom House	Pasadena	Expressing Cultural Values	NRST3
Dubnoff Residence	Pasadena	Expressing Cultural Values	NRST3
Case Study House #8, Eames House	Pacific Palisades	Expressing Cultural Values	NHL (2006)
East Woodland Hills Estates Historic District	Santa Monica Mountains/ Woodland Hills	Expressing Cultural Values	SurveyLA/NRST3
El Cabrillo	Los Angeles	Expressing Cultural Values	NR-local (2005)
Escalon Drive Residential Historic District	Santa Monica Mountains/Encino Hills	Expressing Cultural Values	SurveyLA/NRST3
Eureka Summit Residential Historic District	Santa Monica Mountains/Studio City	Expressing Cultural Values	SurveyLA/NRST3
Fantasy Cottage Thematic Group	Santa Monica Mountains/Studio City	Expressing Cultural Values	NRST3/SurveyLA
Fargo House	Los Angeles	Expressing Cultural Values	NRST3
Florence Nightingale Middle School	Los Angeles	Expressing Cultural Values	NRST3
Folk Victorian Multifamily Property (1905)	Los Angeles	Expressing Cultural Values	NRST3
Frank, Richard and Mary Alice, House	Pasadena	Expressing Cultural Values	NR-local (2009)
Gamble House	Arroyo Seco	Expressing Cultural Values	NHL (1971)
George R. Kress House	Los Angeles	Expressing Cultural Values	NR-local (1998)
Grand Union Hotel	Newbury Park	Expressing Cultural Values	NR-local (1975)
Hale House	Los Angeles	Expressing Cultural Values	NR-local (1973)
Hayvenhurst Drive Residential Historic District	Santa Monica Mountains/ Tarzana	Expressing Cultural Values	NRST3/SurveyLA
Highland Park Ebell Club	Los Angeles	Expressing Cultural Values	NRST3
Highland--Camrose Bungalow Village	Los Angeles	Expressing Cultural Values	NR-local (1989)
Hixon House #1 & #2	Pasadena	Expressing Cultural Values	NRST3
Home Laundry	Pasadena	Expressing Cultural Values	NR-local (1987)
House at 1015 Prospect Boulevard	Pasadena	Expressing Cultural Values	NR-local (2004)
House at 574 Bellefontaine St.	Pasadena	Expressing Cultural Values	NR-local (1998)
J. Bushard/J. Mesmer/V. Vignes Residence	Los Angeles	Expressing Cultural Values	NRST2
J.R. Pinkham Residence	Los Angeles	Expressing Cultural Values	NRST3
James Daniel Derby House	Glendale	Expressing Cultural Values	NR-state, SHL (1978)
Jeffries Cypress Residential Historic District	Los Angeles River	Expressing Cultural Values	NRST3/SurveyLA
John Kelsey House	Pasadena	Expressing Cultural Values	NRST3
John Thomas Dye School	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
Kolb Estate	Beverly Hills	Expressing Cultural Values	NRST3
Kono Kort	Pasadena	Expressing Cultural Values	NRST3
Kubly House	Pasadena	Expressing Cultural Values	NRST3
Leonis Adobe	Santa Monica Mountains	Expressing Cultural Values	NR-local (1975)
Lower Arroyo Seco Historic District	Pasadena	Expressing Cultural Values	NR-state (2005)
Lummis House	Los Angeles	Expressing Cultural Values	NR-state (1971)/SHL

TABLE D-11: CULTURAL RESOURCES RELATED TO THE AMERICAN PERIOD (1848-Present) (continued)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
Architecture, Landscape Architecture, and Urban Design (city locations provided for sub-geographic area) (continued)			
Markham Place Historic District (Arts and Crafts)	Pasadena	Expressing Cultural Values	NR-local (2013)
Marguerita Lane Historic District	Pasadena	Expressing Cultural Values	NR-local (2009)
Marvin House, Captains House	South Pasadena	Expressing Cultural Values	NRST2
Melville C. Branch Residence	Santa Monica Mountains/Pacific Palisades	Expressing Cultural Values	NRST3/SurveyLA
Moraga Drive Apartments	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
Moraga Drive Residential Historic District	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
Mount Pleasant House	Los Angeles	Expressing Cultural Values	NR-local (1976)
Navy and Marine Corps Reserve Center (1941)	Los Angeles	Expressing Cultural Values)	SHL
Novarro House	Los Angeles	Expressing Cultural Values	NRST3
Old Ranch Road Residential Historic District	Santa Monica Mountains/Pacific Palisades	Expressing Cultural Values	NRST3/SurveyLA
Palisades Elementary School	Santa Monica Mountains/Pacific Palisades	Expressing Cultural Values	NRST3
Palisades High School	Santa Monica Mountains/Pacific Palisades	Expressing Cultural Values	NRST3/SurveyLA
Park Place-Arroyo Terrace Historic District	Pasadena	Expressing Cultural Values	NR-national (2007), SHL
Pegfair Estates Historic District	Pasadena	Expressing Cultural Values	NR-local (2010)
Phillip Fritz Residence	Los Angeles	Expressing Cultural Values	NRST2
Pike, Robert and Barbara, House	Pasadena	Expressing Cultural Values	NR-local (2009)
Platform House Historic District	Santa Monica Mountains/ Sherman Oaks	Expressing Cultural Values	NRST3/SurveyLA
Poppy Peak Historic District	Pasadena	Expressing Cultural Values	NR-local (2009)
Pratt Residence	Beverly Hills	Expressing Cultural Values	NRST3
Prebles Restaurant, Googie (1968)	Los Angeles River	Expressing Cultural Values	NRST3
Quonset Hut , 147 N. Avenue 18 (1946)	Los Angeles River	Expressing Cultural Values	NRST3
Ralphs House	Pasadena	Expressing Cultural Values	NRST3
Redwing-Henshaw Residential Historic District	Santa Monica Mountains/ Tarzana	Santa Monica Mountains/ Pacific Palisades	Expressing Cultural Values
Riviera Ranch Residential Historic District	Santa Monica Mountains/Pacific Palisades	Expressing Cultural Values	NRST3/SurveyLA
Samuel Freeman House	Los Angeles	Expressing Cultural Values	NR-local (1971)
Shirley - Winifred Residential Historic District	Santa Monica Mountains/ Tarzana	Expressing Cultural Values	NRST3/SurveyLA
Sherman Oaks Circle Historic District	Santa Monica Mountains/ Sherman Oaks	Expressing Cultural Values	NRST3/SurveyLA
Southwest Museum	Arroyo Seco	Expressing Cultural Values	NR-national (2004)
Steven's House (Malibu)	Santa Monica Mountains	Expressing Cultural Values	NR-local (2009)
Stratton-Porter Estate	Santa Monica Mountains/BelAir	Expressing Cultural Values	NRST3/SurveyLA
Stone Canyon Road Residential Historic District	Santa Monica Mountains/BelAir	Expressing Cultural Values	NRST3/SurveyLA
Storer House	Los Angeles	Expressing Cultural Values	NR-local (1971)
Tanner House	South Pasadena	Expressing Cultural Values	NRST3
The Havenhurst	Los Angeles	Expressing Cultural Values	NRST3
The Montecito Apartments	Los Angeles	Expressing Cultural Values	NR-local (1985)
Thornton Ladd House/Studio	Pasadena	Expressing Cultural Values	NRST3
Toole House	Pasadena	Expressing Cultural Values	NRST3
UCLA Hannah Carter Japanese Garden	Santa Monica Mountains	Expressing Cultural Values	NRST3/SurveyLA
Valley Wood Road Residential Historic District	Santa Monica Mountains/Encino Hills	Expressing Cultural Values	NRST3/SurveyLA

TABLE D-11: CULTURAL RESOURCES RELATED TO THE AMERICAN PERIOD (1848-Present) (continued)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
Architecture, Landscape Architecture, and Urban Design (city locations provided for sub-geographic area) (continued)			
Villa Bonita	Hollywood	Expressing Cultural Values	NR-local (1986)
Villa De Leon	Los Angeles	Expressing Cultural Values	NRST3
Villa Verde	Pasadena	Expressing Cultural Values	NR-local (1984)
Vista del Arroyo Hotel and Bungalows	Pasadena	Expressing Cultural Values	NR-local (1981)
West Temple Apartments (The Rochester)	Los Angeles	Expressing Cultural Values	NRST3
Whitley Heights Historic District	Los Angeles	Expressing Cultural Values	NR-state (1982)
William Howard Taft High School	Santa Monica Mountains/ Woodland Hills	Expressing Cultural Values	NRST3/SurveyLA
Women's Twentieth Century Club of Eagle Rock (Craftsman)	Los Angeles	Expressing Cultural Values	NR-local (2013)
Woodside Historic District	Santa Monica Mountains/ Woodland Hills	Expressing Cultural Values	NRST3/SurveyLA
Ziegler estate	Los Angeles	Expressing Cultural Values	NR-local (2002)
*Other Individual Properties Identified by SurveyLA It should be noted that another 244 individual properties significant for architectural design and urban planning were identified as potentially eligible for the National Register of Historic Places. Most of these structures are individual homes in the Santa Monica Mountains and San Fernando Valley. They represent an extensive variety of architectural styles including: American Colonial Revival; American Foursquare; Craftsman; Dingbat; Expressionist; French Revival (Norman); Georgian Revival; Googie; Hollywood Regency; Hollywood Regency, Late; Industrial, Utilitarian; Mediterranean Revival; Mission Revival; Modern, Early; Modern, Mid-Century; Moderne, Streamline; Monterey Revival; Pueblo Revival; Queen Anne; Ranch (American Colonial, Cape Cod, Contemporary, Hacienda, Traditional, Romanesque Revival, Spanish Colonial Revival, Storybook, Tudor Revival, Vernacular, Victorian.			
Political Ideas, Cultures, and Theories			
Biddie Mason Homesite	Los Angeles River (just south of study area)	Creating Social Institutions and Movements	Five Views, CDRP 1988
Duran's Showboat Bar (Also known as: Bloody Xmas 1951)	Los Angeles River	Creating Social Institutions and Movements	Five Views, CDRP 1988
Chavez Ravine Site (now Dodger Stadium)	Los Angeles River	Creating Social Institutions and Movements	NRST3 (Five Views)
Merwyn C. Gill House	Pasadena	Creating Social Institutions and Movements	NR-local (2009)
William Mead Homes; Ann Street Project, Public Housing (1942)	Los Angeles River	Creating Social Institutions and Movements	NRST2
Industry (gold mining, petroleum, energy, industry)			
Art's Delicatessen	Los Angeles River/Sam Fernando Valley	Developing the American Economy	NRST3/SurveyLA
California Steel and Cornice Co. Metal Shop (1945)	Los Angeles River	Developing the American Economy	NRST3
Cannon Electric Development Co. Plant No. 1	Los Angeles River	Developing the American Economy	NRST3/SurveyLA
Columbia Mills; Talbert-Whitmore Co, Factory (1885-1945)	Los Angeles River	Developing the American Economy	NRST3
Daylight Paper Factory (1925)	Los Angeles River	Developing the American Economy	NRST3
Department of Water and Power Main Street Facility	Los Angeles River	Developing the American Economy	NRST3/SurveyLA
Frank Fletcher Hill Residence (Union Oil Co.)	Santa Monica Mountains	Developing the American Economy	NRST3/SurveyLA
KGB Studios/Former Paper Products Manufacturing Co.	Los Angeles River	Developing the American Economy	NRST3/SurveyLA
Lawry's International (Los Angeles River Center and Gardens)	Los Angeles River	Developing the American Economy	NRST3/SurveyLA
Kelite Products Plant No. 1	Los Angeles River	Developing the American Economy	NRST3/SurveyLA
Kit Kraft Hobbies	Los Angeles River/Sam Fernando Valley	Developing the American Economy	NRST3/SurveyLA

TABLE D-11: CULTURAL RESOURCES RELATED TO THE AMERICAN PERIOD (1848-Present) (continued)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
Industry (gold mining, petroleum, energy, industry) (continued)			
Lacy Street Production Center	Los Angeles River	Developing the American Economy	NRST3/SurveyLA
Municipal Power Plant (1946– 2000)	Los Angeles River	Developing the American Economy	NRST2
North Hollywood Toyota	Los Angeles River/Sam Fernando Valley	Developing the American Economy	NRST3/SurveyLA
STADCO Fab Shop; Veolia Transportation	Los Angeles River/Sam Fernando Valley	Developing the American Economy	NRST3/SurveyLA
Standard Oil Maintenance Facilities(1920)	Los Angeles River	Developing the American Economy	NRST3
Standard Oil Co. Office, Auto Repair and Machine Shop	Los Angeles River	Developing the American Economy	NRST3/SurveyLA
Well No. 4, Pico Canyon Oil Field	Santa Susana Mountains/ San Fernando	Developing the American Economy	NHL (1966)
Transportation/ Engineering			
Arroyo Seco Parkway Historic District	Arroyo Seco	Developing the American Economy	NR-state
Bridge #53-199r, Figueroa Street Tunnel	Arroyo Seco	Developing the American Economy	NRST3
Bridge #53-200r, Figueroa Street Tunnel	Arroyo Seco	Developing the American Economy	NRST3
Butterfield Overland Trail	Extends through study area	Developing the American Economy	Under Evaluation
Colorado Street Bridge	Arroyo Seco	Developing the American Economy	NR-state (1981), SHL
Girard Reservoir	Santa Monica Mountains/ Woodland Hills	Developing the American Economy	NRST3/SurveyLA
La Loma Bridge	Arroyo Seco	Developing the American Economy	NR-local (2004)
Southern Pacific: golden spike at Lang Station connected Los Angeles with San Francisco (Santa Clarita)	Santa Susana Mountains	Developing the American Economy	SHL
Mount Lowe Railway	San Gabriel Mountains	Developing the American Economy, Creating Social Institutions and Movements	NR-state (1992)
Old Santa Susana Stage Road (Santa Susana Pass State Historic Park)	Simi Hills/Santa Susana Mountains	Developing the American Economy	NR-local (1974)
Pacific Crest Trail	Extends through study area	Creating Social Institutions and Movements	NST
Route 66	Extends through study area	Developing the American Economy	NPS preservation program
Santa Susana Railroad Depot	Simi Valley	Developing the American Economy	NRST2
Taylor Yard Signal Tower	Los Angeles River	Developing the American Economy	NRST3/SurveyLA
The Cascades, First Los Angeles Aqueduct	Santa Susana Mountains/Upper Santa Clara River	Transforming the Environment	SHL
Los Angeles Union Passenger Terminal (1939)	Los Angeles River	Developing the American Economy	NR-national (1980)
Cuesta Viejo (San Fernando Pass)	Santa Susana Mountains (Santa Clarita Valley)	Developing the American Economy	NRST2
Beale's Cut Stagecoach Pass	Santa Susana/San Gabriel Mountains	Developing the American Economy, Expressing Cultural Values	SHL

TABLE D-11: CULTURAL RESOURCES RELATED TO THE AMERICAN PERIOD (1848-Present) (continued)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
Commerce			
Arroyo Seco Federal Bank Building	Los Angeles River	Developing the American Economy	NRST2
Chinese Warehouse (La Casa de Pelanconi)	Los Angeles River	Developing the American Economy	Five Views (CDPR 1988)
Coldwater Curve Shops	Los Angeles River/San Fernando Valley	Developing the American Economy	NRST3/LA Survey
Oak-Crest Market	Santa Monica Mountains	Developing the American Economy	NRST3/LA Survey
Paulist Productions/ Thelma Todd's Sidewalk Café	Santa Monica Mountains	Developing the American Economy	NRST3/LA Survey
Pico House Hotel	Los Angeles River	Developing the American Economy	SHL
Price Pfister Brass Manufacturing Co. (1914)	Los Angeles River	Developing the American Economy	NRST3
Stearns Mill / Eagle Mills / Capitol Milling Company	Los Angeles River	Developing the American Economy	NRST2
Swarthmore Avenue Commercial Historic District	Los Angeles River/Pacific Palisades	Developing the American Economy	NRST3/LA Survey
Science and Technology			
Griffith Observatory/ Park Planetarium	Santa Monica Mountains	Expanding Science and Technology	NRST2
Mount Wilson Observatory	San Gabriel Mountains	Expanding Science and Technology	NHL (Potential Eligibility)
Lookout Mountain Air Force Station	Santa Monica Mountains	Shaping the Political Landscape	NRST3/SurveyLA
Los Pinetos Nike Site	San Gabriel Mountains	Shaping the Political Landscape	NRST2
Nike Missile Control Site LA-96	Santa Monica Mountains	Shaping the Political Landscape	NRST3/SurveyLA
Rocketdyne Facility in Canoga Park	Los Angeles River/San Fernando Valley	Shaping the Political Landscape	NRST3/SurveyLA
Santa Susana Field Laboratory Alfa Test Area Historic District	Simi Hills	Shaping the Political Landscape	NRST2
Alfa Test Area Historic District, Santa Susana Field Laboratory	Simi Hills	Shaping the Political Landscape	NRST2
Bravo Test Area Historic District, Santa Susana Field Laboratory	Simi Hills	Shaping the Political Landscape	NRST2
Coca Test Area Historic District, Santa Susana Field Laboratory	Simi Hills	Shaping the Political Landscape	NRST2
Santa Susana Field Laboratory Alfa I Test Stand (Building 2727)	Simi Hills	Shaping the Political Landscape	NRST2
Santa Susana Field Laboratory Alfa III Test Stand (Building 2729)	Simi Hills	Shaping the Political Landscape	NRST2
Santa Susana Field Laboratory Alfa Control House (Building 2208)	Simi Hills	Shaping the Political Landscape	NRST2
Santa Susana Field Laboratory Bravo Test Area Historic District	Simi Hills	Shaping the Political Landscape	NRST2
Santa Susana Field Laboratory Bravo I Test Stand (Building 2730)	Simi Hills	Shaping the Political Landscape	NRST2
Santa Susana Field Laboratory Bravo II Test Stand (Building 2731)	Simi Hills	Shaping the Political Landscape	NRST2
Santa Susana Field Laboratory Bravo Control House (Building 2213)	Simi Hills	Shaping the Political Landscape	NRST2
Santa Susana Field Laboratory Coca Test Area Historic District	Simi Hills	Shaping the Political Landscape	NRST2

TABLE D-11: CULTURAL RESOURCES RELATED TO THE AMERICAN PERIOD (1848-Present) (continued)

Resource Name	Sub-Geographic Area	NPS Themes	Listing/ Evaluation Status
Science and Technology			
Santa Susana Field Laboratory Coca I Test Stand (Building 733)	Simi Hills	Shaping the Political Landscape	NRST2
Santa Susana Field Laboratory Coca IV Test Stand (Building 787)	Simi Hills	Shaping the Political Landscape	NRST2
Santa Susana Field Laboratory Coca Control House (Building 218)	Simi Hills	Shaping the Political Landscape	NRST2
Space Flight Operations Facility	Pasadena	Expanding Science and Technology	NHL (1985)
Twenty-Five Foot Space Simulator	Pasadena	Expanding Science and Technology	NHL (1985)

Sources: National Register of Historic Places Database (accessed 2012, 2013); Office of Historic Preservation Record Search, Central Coast Information Center (June 2011); SurveyLA (Architectural Resources Group, Inc. 2013a, 2013b, and 2013c; Historic Resources Group and Galvin Preservation Associates 2013; Historic Resources Group 2013a and 2013b; LSA Associates 2011, GPA Consulting, Inc. 2013; Sapphos Environmental, Inc. 2012); CDRP 1988; Federal Determinations of Eligibility October 2011, NASA 2009, Angeles National Forest, Heritage Resources Database (2011).

Status codes:
NHL = National Historic Landmark; NHT = National Historic Trail; NR = National Register of Historic Places; NRST2 = Determined eligible for listing in the National Register of Historic Places or California Register; NRST3 = Appears Eligible for NR as an individual property through survey evaluation; NST = National Scenic Trail; SHL = California State Historic Landmark, Five Views = California State Historic Preservation Offices Ethnic Historic Sites Survey. SurveyLA are sites identified through the City of Los Angeles' citywide survey to identify and document historic resources representing significant themes in the city's history.

Notes:
- OHP records were compiled in June 2011. Data is not comprehensive at the local level. Many cities have their individual local landmarks. This information has not been collected for every city/community within the study area.
- Although many resources represent more than one theme/topic, they are listed under their primary them/topic.
- Location information for archeological sites and historic sites on private land that have been determined eligible/or potentially eligible for listing on either the National Register of California Register is not identified.

TABLE D-12: RE-ENGINEERING NATURE - RESOURCES RELATED TO WATER CONVEYANCE

Site	Location	Listing/ Evaluation Status
Spanish and Mexican Colonialism (1771-1848)		
Waterworks at Mission San Fernando del Rey de Espana (1811). The mission water system was completed by 1811 (Crawford, et al. 2000). Much of the site has lost its integrity but remains historically significant.	San Fernando Valley (near study area)	Portions of the original dam have survived as ruins.
The Zanja Madre (1781-1848). A simple earthen canal known as the Zanja Madre was dug to convey fresh water more than a mile from the Los Angeles River to the town plaza of El Pueblo, where it was used for domestic purposes (Crawford, et al. 2000).	Los Angeles River	Portions of the original alignment can be traced, but surviving ruins all date from the American Period.
First American Period – Development of the Existing Resource Base (1848-1898)		
The Zanja Madre. The original Zanja Madre, simple earthen canals, were lined during the American Period and eventually covered in brick.	Los Angeles River	Portions of this enclosed aqueduct have been discovered at Union Station and Los Angeles State Historic Park and in Chinatown (Water and Power Associates 2013).
Crystal Springs. The subterranean rock formation once forced aquifer water to the surface here. The Los Angeles City Water Company drew much of its water from this source. Located in a Griffith Park picnic area. Springs may no longer be present due to a declining water table in the San Fernando Valley aquifer (Kahrl 1982).	Santa Monica Mountains	Further research is needed to determine integrity.
Second American Period – Transforming the Natural Resource Base (1898-1966)		
Los Angeles Aqueduct and Associated Facilities (1908-1913)		
The Owensmouth Cascade (1913). The Los Angeles Aqueduct flows by gravity through metal pipe for much of the way from Owens Valley. After crossing the Santa Clarita Valley, it enters a tunnel which passes under a spur of the San Gabriel Mountains, and reaches the northern end of the San Fernando Valley near Sylmar. Here the water emerges from a portal located high up the hillside and tumbles down a long, concrete-lined canal, known popularly as "The Cascades" but originally as the "Owensmouth Cascades."	San Fernando Valley	State Historic Landmark
Los Angeles Reservoir (Van Norman Lake). From the Cascades, the Owens River water is conveyed through an open canal to Van Norman Lake. This storage facility was originally known as the Los Angeles Reservoir, a name which reflects its significance to the city at the time it was constructed.	San Fernando Valley (near study area)	It appears to have been altered substantially over the years, but additional assessment should be made.
St. Francis Dam Ruins (1926). The Saint Francis Dam was constructed on San Francisquito Creek, a tributary of the Santa Clara River, which the Los Angeles Aqueduct follows through the Sierra Pelona from Antelope Valley (in the southern Mojave Desert) to the Santa Clarita Valley. Completed in 1926 to store water on the Los Angeles Aqueduct. It failed catastrophically on 3/13/1928, shortly after filling for the first time. The dam's failure resulted in one of the worst man-made disasters in the nation's history.	Sierra Pelona (north of study area)	The ruins are still extant and appear to retain integrity, while the site itself, protected within the Angeles National Forest, has not been substantially altered since the period of significance.
Mulholland Dam and Hollywood Reservoir (1924). Designed to provide storage for water conveyed through the Los Angeles Aqueduct. Located at eastern end of the Santa Monica Mountains near Griffith Park. The design of Mulholland Dam is nearly identical to that of the erstwhile Saint Francis Dam, consisting of a concrete arch 933 feet in length and 195 feet high. After the collapse of the Saint Francis Dam, concern over the potential for a similar failure of the Mulholland Dam led city engineers to backfill tons of earth against the front of this structure, all but burying its elegantly curved, concrete face. One of the more significant historical properties associated with this theme and period (i.e., the first period of inter-basin water transfers by the city of Los Angeles).	Santa Monica Mountains	Appears to have retained integrity to their period of significance, but needs further assessment.
Chatsworth Dam (1918). Located on the western edge of the San Fernando Valley, it was designed to impound water for irrigation purposes and reflects a time when the San Fernando Valley was still primarily agricultural. The reservoir was drained in 1969 for maintenance, but damage to the structure caused by the 1971 Sylmar earthquake prevented it from being refilled. Though still owned by the Los Angeles Department of Water and Power, the property is now managed as a nature preserve though remains largely closed to the public.	Simi Hills	Further research should be done to assess its cultural significance and integrity.
Lower Franklin Dam (1922). This structure impounds a small reservoir on the Franklin Canyon River and was built by the city to store water for domestic and agricultural use.	Santa Monica Mountains	Further research should be done to assess its cultural significance and integrity.
Stone Canyon Dam (1924). Built by the city to store water for domestic and agricultural use. In 1954, Upper Stone Canyon Dam was constructed further upstream.	Santa Monica Mountains	Further research should be done to assess its cultural significance and integrity.
Encino Reservoir (1920). This structure was built to store water for domestic and agricultural use.	Santa Monica Mountains	Further research should be done to assess its cultural significance and

Sources: (Crawford et al. 2000, Cogstone 2003, Water and Power Associates 2013, Kahrl 1982)

TABLE D-13: RE-ENGINEERING NATURE - RESOURCES RELATED TO FLOOD PROTECTION

Site	Location	Listing/ Evaluation Status
Local Flood Control Engineering (1914-1934)		
Hundreds of upstream check dams (1930-1934) were constructed in mountain canyons as part of Eaton's Comprehensive Plan. These simple field-stone structures typically measured 6 to 10 ft. in height and would span small canyons and arroyos at regular intervals. The structures were sometimes reinforced with wire or cable. Although highly effective in other geographic environments where periodic flooding was less extreme than in southern California, here they proved all-but-worthless. Most were washed away during the floods of 1934.	San Gabriel Mountain Foothills	Additional survey is required to determine whether any of the original structures remain from prior to the 1934 floods.
Downstream channel improvements (1914-1934) were also made on approximately 227 miles of nearly 500 miles of natural river channels. Most of this work, however, was temporary in nature, comprising woven-brush revetment and similarly ephemeral construction.	River channel sections within the study area	None of this improvement can be assumed to have survived (unless as buried archeological ruins).
Devils Gate Dam (1920) was the first dam to be built by the Los Angeles County Flood Control District during the first period of flood control engineering. Consistent with the multiple use objectives of the early flood control district, Devils Gate also stores water for domestic and agricultural use and provides important habitat for fish and other wildlife.	Arroyo Seco	The historic integrity of the property remains to be assessed.
Pacoima Dam (1928). At the time of construction, it was the tallest concrete arch dam in the United States. Located within the Los Angeles River watershed on the Pacoima Wash, this dam lies possesses cultural significance as a good example of early engineering solutions during the first period of local flood control development.	San Gabriel Mountains	Previously assessed for its significance in 1995 and determined not eligible. The analysis was not available to the study team.
Big Tujunga Dam (1931). Located on Big Tujunga Creek within the Angeles National Forest, this large structure comprises a concrete arch measuring 208 ft. in height and 505 f in length. Its utility for flood control has largely been superseded by the Hansen Flood Control Basin.	San Gabriel Mountains	The historic integrity of this property remains to be determined.
Federal Assistance for Flood Control Engineering (1935-1965)		
Debris Basins. By the end of this period (1965), the U.S. Army Corps of Engineers had constructed 17 debris basins on tributaries within the Los Angeles River watershed. These structures were typically located in the foothills at the mouths of small canyons and arroyos. As a whole, they represent an integral part of the flood control system and the design philosophy which guided it during this period of significance.	San Gabriel Mountain Foothills	Many lie within the study area. Systematic inventory is needed to determine integrity.
Hansen Flood Control Basin (1940). Completed in 1940 at the mouth of Big Tujunga Wash within the Los Angeles River watershed. This was the first large flood control basin constructed after the 1938 floods, which demonstrated the efficacy of these structures. .	Verdugo Mountains	L.A. Survey found this to be significant for both recreational and public works values.
Sepulveda Flood Control Basin (1941). Located on the upper Los Angeles River within the San Fernando Valley. This structure was built at nearly the same time as the Hansen Flood Control Basin, located only a few miles north, and possesses similar historical significance.	Los Angeles River (near study area)	L.A. Survey found this to be significant for both recreational and public works values.

Sources: (Orsi 2004, Turhollow 1975)

Note: These resources would need to be evaluated within the larger context of other water conveyance and control features in the surrounding area, including the Los Angeles River Harbor Diversion, San Dimas Dam, Big Santa Anita Dam, Puddingstone Dam, Big Dalton Dam, Cogswell Dam, Morris Dam, San Gabriel Dam No. 1, Lopez Flood Control Basin, Santa Fe Flood Control Basin, Whittier Narrows Flood Control Basin, and other sites.

Appendix E: National Historic Landmark Criteria Sec 65.4

The criteria applied to evaluate properties for possible designation as National Historic Landmarks or possible determination of eligibility for National Historic Landmark designation is listed below. These criteria shall be used by NPS in the preparation, review and evaluation of National Historic Landmark studies. They shall be used by the Advisory Board in reviewing National Historic Landmark studies and preparing recommendations to the Secretary. Properties shall be designated National Historic Landmarks only if they are nationally significant. Although assessments of national significance should reflect both public perceptions and professional judgments, the evaluations of properties being considered for landmark designation are undertaken by professionals, including historians, architectural historians, archeologists and anthropologists familiar with the broad range of the nation's resources and historical themes. The criteria applied by these specialists to potential landmarks do not define significance nor set a rigid standard for quality. Rather, the criteria establish the qualitative framework in which a comparative professional analysis of national significance can occur. The final decision on whether a property possesses national significance is made by the Secretary on the basis of documentation including the comments and recommendations of the public who participate in the designation process.

(a) Specific Criteria of National Significance: The quality of national significance is ascribed to districts, sites, buildings, structures and objects that possess exceptional value or quality in illustrating or interpreting the heritage of the United States in history, architecture, archeology, engineering and culture and that possess a high degree of integrity of location, design, setting, materials, workmanship, feeling and association, and:

(1) That are associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent, the broad national patterns of United States history and from which an understanding and appreciation of those patterns may be gained; or

(2) That are associated importantly with the lives of persons nationally significant in the history of the United States; or

(3) That represent some great idea or ideal of the American people; or

(4) That embody the distinguishing characteristics of an architectural type specimen exceptionally valuable for a study of a period, style or method of construction, or that represent a significant, distinctive and exceptional entity whose components may lack individual distinction; or

(5) That are composed of integral parts of the environment not sufficiently significant by reason of historical association or artistic merit to warrant individual recognition but collectively compose an entity of exceptional historical or artistic significance, or outstandingly commemorate or illustrate a way of life or culture; or

(6) That have yielded or may be likely to yield information of major scientific importance by revealing new cultures, or by shedding light upon periods of occupation over large areas of the United States. Such sites are those which have yielded, or which may reasonably be expected to yield, data affecting theories, concepts and ideas to a major degree.

(b) Ordinarily, cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings and properties that have achieved significance within the past 50 years are not eligible for designation. Such properties, however, will qualify if they fall within the following categories:

(1) A religious property deriving its primary national significance from architectural or artistic distinction or historical importance; or

(2) A building or structure removed from its original location but which is nationally significant primarily for its architectural merit, or for association with persons or events of transcendent importance in the nation's history and the association consequential; or

(3) A site of a building or structure no longer standing but the person or event associated with it is of transcendent importance in the nation's history and the association consequential; or

(4) A birthplace, grave or burial if it is of a historical figure of transcendent national significance and no other appropriate site, building or structure directly associated with the productive life of that person exists; or

(5) A cemetery that derives its primary national significance from graves of persons of transcendent importance, or from an exceptionally distinctive design or from an exceptionally significant event; or

(6) A reconstructed building or ensemble of buildings of extraordinary national significance when accurately executed in a suitable environment and presented in a

dignified manner as part of a restoration master plan, and when no other buildings or structures with the same association have survived; or

(7) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own national historical significance; or

(8) A property achieving national significance within the past 50 years if it is of extraordinary national importance.

Appendix F: NPS Thematic Framework (Cultural Resources)

NPS Cultural Resources Thematic Framework

The revised framework will guide the NPS, working independently and with its partners in the private and public sectors, in:

- evaluating the significance of resources for listing in the National Register of Historic Places, for designation as National Historic Landmarks, or for potential addition to the National Park System;
- assessing how well the themes are currently represented in existing units of the National Park System and in other recognized areas; and,
- expanding and enhancing the interpretive programs at existing units of the National Park System to provide a fuller understanding of our nation's past.

The use of the framework need not be limited to the federal level, however, for the conceptualization it provides can equally inform preservation and interpretation at local, state, and regional levels.

The framework's themes are represented in the following diagram. They embrace prehistory to the modern period and a multiplicity of human experiences. The diagram reflects how scholarship is dramatically changing the way we look at the past, reconstructing it as integrated, diverse, complex, human experience. Each segment in the diagram represents a significant aspect of the human experience. The reality of the interrelationships is reflected in the overlapping circles.

The framework draws upon the work of scholars across disciplines to provide a structure for capturing the complexity and meaning of human experience and for understanding that past in coherent, integrated ways. For purposes of organization, the following outline, like the diagram, provides eight seemingly discrete categories, but they are not meant to be mutually exclusive. Cutting across and connecting the eight categories are three historical building blocks: people, time, and place.

Thematic Framework

I. Peopling Places

This theme examines human population movement and change through prehistoric and historic times. It also looks at family formation, at different concepts of gender, family, and sexual division of labor, and at how they have been expressed in the American past. While patterns of daily life-birth, marriage, childrearing-are often taken for granted, they have a profound influence on public life.

Life in America began with migrations many thousands of years ago. Centuries of migrations and encounters have resulted in diverse forms of individual and group interaction, from peaceful accommodation to warfare and extermination through exposure to new diseases.

Communities, too, have evolved according to cultural norms, historical circumstances, and environmental contingencies. The nature of communities is varied, dynamic, and complex. Ethnic homelands are a special type of community that existed before incorporation into the political entity known as the United States. For example, many Indian sites, such as Canyon de Chelly National Monument in Arizona, are on tribal lands occupied by Indians for centuries. Similarly, Hispanic communities, such as those represented by San Antonio Missions National Historical Park, had their origins in Spanish and Mexican history. Distinctive and important regional patterns join together to create microcosms of America's history and to form the "national experience."

Topics that help define this theme include:

1. family and the life cycle
2. health, nutrition, and disease
3. migration from outside and within
4. community and neighborhood
5. ethnic homelands
6. encounters, conflicts, and colonization

II. Creating Social Institutions and Movements

This theme focuses upon the diverse formal and informal structures such as schools or voluntary associations through which people express values and live their lives. Americans generate temporary movements and create enduring institutions in order to define, sustain, or reform these values. Why people organize to transform their institutions is as important to understand as how they choose to do so. Thus, both the diverse motivations people act on and the strategies they employ are critical concerns of social history.

Sites such as Women's Rights National Historical Park in Seneca Falls, New York, and the Eugene V. Debs National Historic Landmark in Indiana illustrate the diversity and changeable nature of social institutions. Hancock Shaker Village, a National Historic Landmark, and Touro Synagogue, a National Historic Site, reflect religious diversity. This category will also encompass temporary movements that influenced American history but did not produce permanent institutions.

Topics that help define this theme include:

1. clubs and organizations
2. reform movements
3. religious institutions
4. recreational activities

III. Expressing Cultural Values

This theme covers expressions of culture-people's beliefs about themselves and the world they inhabit. For example, Boston African American Historic Site reflects the role of ordinary Americans and the diversity of the American cultural landscape. Ivy Green, the birthplace of Helen Keller in Alabama, and the rural Kentucky Pine Mountain Settlement School illustrate educational currents. Walnut Street Theater in Pennsylvania, Louis Armstrong's house in New York City, the Chautauqua Historic District in New York, and the Cincinnati Music Hall-all National Historic Landmarks-reflect diverse aspects of the performing arts.

This theme also encompasses the ways that people communicate their moral and aesthetic values. The gardens and studio in New Hampshire of Augustus Saint-Gaudens, one of America's most eminent sculptors, and Connemara, the farm in North Carolina of the noted poet Carl Sandburg, both National Historic Sites, illustrate this theme.

Topics that help define this theme include:

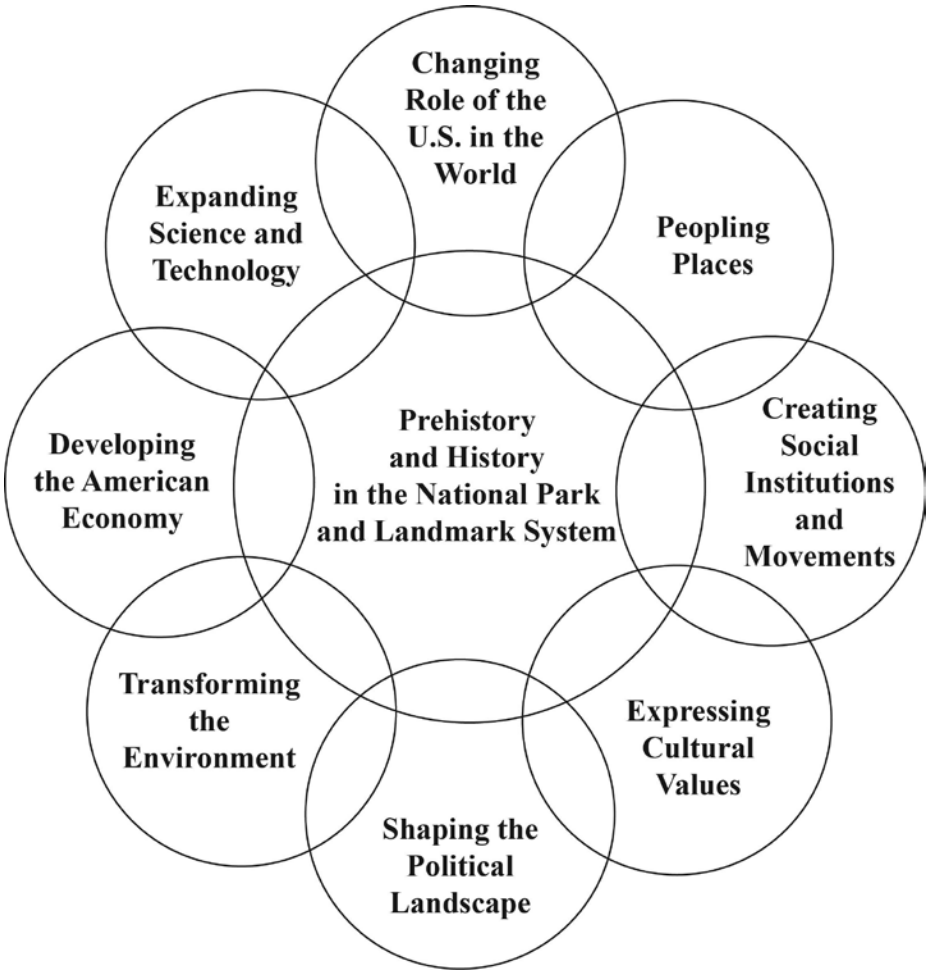
1. educational and intellectual currents
2. visual and performing arts
3. literature
4. mass media
5. architecture, landscape architecture, and urban design
6. popular and traditional culture

IV. Shaping the Political Landscape

This theme encompasses tribal, local, state, and federal political and governmental institutions that create public policy and those groups that seek to shape both policies and institutions. Sites associated with political leaders, theorists, organizations, movements, campaigns, and grassroots political activities all illustrate aspects of the political environment. Independence Hall is an example of democratic aspirations and reflects political ideas.

Places associated with this theme include battlefields and forts, such as Saratoga National Historical Park in New York and Fort Sumter National Monument in South Carolina, as well as sites such as Appomattox Court House National Historical Park in Virginia that commemorate watershed events in the life of the nation.

The political landscape has been shaped by military events and decisions, by transitory movements and protests, as well as by political parties. Places associated with leaders in the development of the American constitutional system such as Abraham Lincoln's home in Illinois and the birthplace of Martin Luther King, Jr., in Atlanta-both National Historic Sites-embody key aspects of the political landscape.



Topics that help define this theme include:

1. parties, protests, and movements
2. governmental institutions
3. military institutions and activities
4. political ideas, cultures, and theories

V. Developing the American Economy

This theme reflects the ways Americans have worked, including slavery, servitude, and non-wage as well as paid labor. It also reflects the ways they have materially sustained themselves by the processes of extraction, agriculture, production, distribution, and consumption of goods and services.

Vital aspects of economic history are frequently manifested in regional centers, for example, ranching on the Great Plains illustrated by Grant-Kohrs Ranch National Historic Site in Montana. Individual economic sites, such as Lowell National Historical Park in Massachusetts, may be distinctive in representing both the lives of workers and technological innovations.

In examining the diverse working experiences of the American people, this theme encompasses the activities of farmers, workers, entrepreneurs, and managers, as well as the technology around them. It also takes into account the historical "layering" of economic society, including class formation and changing standards of living in diverse sectors of the nation. Knowledge of both the Irish laborer and the banker, for example, are important in understanding the economy of the 1840s.

Topics that help define this theme include:

1. extraction and production
2. distribution and consumption
3. transportation and communication
4. workers and work culture
5. labor organizations and protests
6. exchange and trade
7. governmental policies and practices
8. economic theory

VI. Expanding Science and Technology

This theme focuses on science, which is modern civilization's way of organizing and conceptualizing knowledge about the world and the universe beyond. This is done through the physical sciences, the social sciences, and medicine. Technology is the application of human ingenuity to modification of the environment in both modern and traditional cultures. Alibates Flint Quarries National Monument in Texas reflects pre-Columbian innovations while Edison National Historic Site in New Jersey reflects technological advancement in historic times. Technologies can be particular to certain regions and cultures.

Topics that help define this theme include:

1. experimentation and invention
2. technological applications
3. scientific thought and theory
4. effects on lifestyle and health

VII. Transforming the Environment

This theme examines the variable and changing relationships between people and their environment, which continuously interact. The environment is where people live, the place that supports and sustains life. The American environment today is largely a human artifact, so thoroughly has human occupation affected all its features. Cuyahoga Valley National Recreation Area, which includes portions of the Ohio and Erie Canal, for example, is a cultural landscape that links natural and human systems, including cities, suburbs, towns, countryside, forest, wilderness, and water bodies.

This theme acknowledges that the use and development of the physical setting is rooted in evolving perceptions and attitudes. Sites such as John Muir National Historic Site in California and Sagamore Hill National Historic Site in New York, the home of President Theodore Roosevelt, reflect the contributions of leading conservationists. While conservation represents a portion of this theme, the focus here is on recognizing the interplay between human activity and the environment as reflected in particular places, such as Hoover Dam, a National Historic Landmark.

Topics that help define this theme include:

1. manipulating the environment and its resources
2. adverse consequences and stresses on the environment
3. protecting and preserving the environment

VIII. Changing Role of the United States in the World Community

This theme explores diplomacy, trade, cultural exchange, security and defense, expansionism-and, at times, imperialism. The interactions among indigenous peoples, between this nation and native peoples, and this nation and the world have all contributed to American history. Additionally, this theme addresses regional variations, since, for example, in the eighteenth century, the Spanish southwest, French and Canadian middle west, and British eastern seaboard had different diplomatic histories.

America has never existed in isolation. While the United States, especially in the nineteenth and twentieth centuries, has left an imprint on the world community, other nations and immigrants to the United States have had a profound influence on the course of American history.

The emphasis in this category is on people and institutions-from the principals who define and formulate diplomatic policy, such as presidents, secretaries of state, and labor and immigrant leaders, to the private institutions, such as the Carnegie Endowment for International Peace, that influence America's diplomatic, cultural, social, and economic affairs. Monticello, the Virginia home of Thomas Jefferson, a National Historic Landmark, reflects the diplomatic aspirations of the early nation.

Topics that help define this theme include:

1. international relations
2. commerce
3. expansionism and imperialism
4. immigration and emigration policies

Appendix G: Process Used to Develop the 2005 *Santa Monica Mountains National Recreation Area Fire Management Plan and Environmental Impact Statement*

The legislation that authorized the Rim of the Valley Corridor Special Resource Study (the Consolidated Natural Resources Act of 2008, P.L. 110-229 – May 2008), Section 327) also directed the National Park Service to document:

"(1) the process used to develop the existing Santa Monica Mountains National Recreation Area Fire Management Plan and Environmental Impact Statement (September 2005); and
(2) all activity conducted pursuant to the plan referred to in paragraph (1) designed to protect lives and property from wildfire."

This appendix is included in the draft study report to respond to this request from Congress.

The *Final Environmental Impact Statement for a Fire Management Plan Santa Monica Mountains National Recreation Area* was published in September 2005 and a completed Record of Decision was signed by the NPS Regional Director in February 2006. These documents provide a detailed program of actions to carry out fire management policies and objectives on NPS-owned lands within the legislated boundary of the recreation area. The goals and objectives of the fire management plan have their foundation in the park's planning documents: the General Management Plan (2003), the Resource Management Plan (1999), as well as NPS and federal legislation and fire policy; the NPS Organic Act; and the enabling legislation establishing SMMNRA.

SMMNRA Fire Management Plan (2005) Process

The process used to develop the SMMNRA Fire Management Plan was the process commonly followed by a federal agency to develop a management plan under the National Environmental Policy Act. The main steps in this process are: 1) scoping, 2) alternatives development, 3) draft plan with public involvement, 4) final plan and record of decision.

Pre-scoping Workshop

In the summer of 2001, prior to initiating public scoping for the Santa Monica Mountains National Recreation Area Fire Management Plan, the National Park Service hosted a fire management workshop with a variety of fire management and land management agencies as well as resource management and fire ecology professionals. Approximately 30 people discussed their ideas, thoughts and concerns on what a fire management program could look like in the Santa Monica Mountains based on current science and conservation planning. From this meeting, seven options encompassing the workshop's findings for fire management were initially drafted.

Public Outreach

Next, the NPS published a notice of scoping to initiate preparation of the fire management plan and environmental impact statement in the March 26, 2002 federal Register (Volume 67, #58). A number of opportunities were subsequently provided for the public to participate in the conservation planning and environmental impact analysis process. The fire plan team primarily used newsletters and meetings to solicit public comments and suggestions for the plan. Four public meetings were held in the spring of 2002 in the cities of Beverly Hills/Los Angeles, Calabasas/Agoura Hills, Malibu, and Thousand Oaks to provide background information on the project to encourage the public to submit their comments and concerns. Additional meetings with key partner agencies were also conducted in June 2002. Approximately 35 citizens attended the 6 meetings. In addition, letters were sent to approximately fifteen citizens with Native American affiliations to solicit their comments.

Issues Addressed in the Plan

The plan addressed several issues that were raised during the public scoping process. The first of these issues was firefighter and public safety including the relocation of overhead power lines underground to reduce fire starts from arcing power lines; how to provide information to homeowners so that they implement those measures necessary to provide for their own safety in extreme wildfire; and and how to refine existing risk analysis with factors such as density, ingress and egress, fuel loads, fire history to identify high-risk areas using GIS and fire models. Another issue addressed in the plan was to concentrate on fuels tratments at the wildland urban interface to optimize the effectiveness of property protection and to minimize impacts. A third topic included the operational and policy coordination amoun all agencies within SMMNRA to include consistent brush clearance policies and uniform emergency plans. A fourth topic analyzed was the impact of fire management activities including suppression actions and the spread of invasive plants and animals. Another significant topic analyzed was the use of presecribed fire for restoration activities. The final topic analyzed was appropriate land use planning.

Development of Alternatives

In response to the wide range of comments offered during the scoping meetings, an interdisciplinary team developed a range of alternatives. The alternatives were designed to provide effective fire protection at the wildland urban interface while protecting ecological and cultural resource values based on a

realistic understanting of the nature of the vegetation and the fire climate of the Santa Monica Mountains. The alternatives were structured around the fire management tools available to accomplish the program goals and objectives of the plan. The tools included wildland fire suppression, mechanical and biomechanical fuel reduction, strategic fuels treatment, landscape mosaic prescribed fire, and public education and support.

The simplest alternative (Alternative 4) focused primarily on mechanical fuel modification at the wildland urban interface. The next alternative included mechanical fuel modification with added ecological prescribed burning (Alternative 3). The most complex alternative (Alternative 2) included mechanical fuel modification, ecological prescribed burning and strategic fuels treatment. The No Action (Alternative 1) would have left in place the recommendations of the previous Fire Management Plan from 1994 that included landscape mosaic prescribed burning.

All of the alternatives included complete suppression of wildfires, coordination of vegetation management with local fire agencies, consultation with local fire agencies to protect resources during suppression activities, assessment of wildland fire hazards to people, homes, and resources and use of public education to reduce the associated risks.

The fire management actions in all of the proposed alternatives apply only to National Park Service properties. Related activities such as coordination and consulation with local fire agencies, assessment of fire hazard, and public education apply to all private and public lands within the Santa Monica Mountains National Recreation Area (SMMNRA) boundary.

Public Release of the Draft Fire Plan

Four alternatives were developed and carried forward for full analysis. The Environmental Protection Agency (EPA) issued its notice of filing of the draft environmental impact statement in the June 10th, 2004, Federal Register (Volume 69, #185); the NPS notice of availability of the Draft EIS for a 90-day public review opportunity was published on June 16th, 2004. About 500 letters announcing the availability of the draft plan were distributed. Over 250 copies of the draft plan in both paper and compact disc form were distributed. The draft plan was also placed on the internet and made available at approximately 75 libraries throughout the region.

The planning team held four public meetings on the draft environmental impact statement and fire plan from August 13 – 18, 2004 in Agoura Hills/Calabasas, Los Angeles, Malibu, and Thousand Oaks. Approximately 45 citizens attended these meetings. They were presented with the facts and information that led to the formulation of the preferred alternative. Participants were encouraged to submit their comments in writing by letter, fax, or e-mail. Approximately 25 written responses to the draft fire plan were received from the public, agencies, and organizations during the comment period. Overall no new public issues or concerns not already addressed in the Draft EIS were received.

The Preferred Alternative

Alternative 2 was deemed to be the "environmentally preferred" alternative because it was the most flexible and utilizes all available fire management strategies identified to be appropriate in the Santa Monica Mountains. In this alternative, prescribed burning is used to provide resource enhancement and hazard fuel reduction projects are considered in strategic locations to reduce the spread of wildfires. Short-term and site-specific resource impacts of strategic treatments are weighed against long-term and regional hazard fuel reduction benefits. Strategic zones are identified using analysis of vegetation types, fuel characteristics, fire spreadmodels, and potential hazards to life, property, and natural and cultural resources. Mechanical or biomechanical fuel reduction is concentrated at the wildland urban interface to protect homes.

Final Plan

The EPA's notice of filing of the Final EIS was published in the December 23rd, 2005 edition of the Federal Register (Volume 70, #246); the NPS notice of availability was published on December 28th, 2005. The Final EIS was mailed out, placed in local libraries, posted on the internet, and otherwise distributed in keeping with the issuance of the Draft EIS. The requisite 30-day No Action waiting period concluded January 23, 2006. Both during that period and subsequently, no letters or other comments responding to the Final EIS were received. On February 7th 2006 the EPA published a "no need for comment" notice in the Federal Register.

Record of Decision

On February 16, 2006, Regional Director Jonathan B. Jarvis signed the Record of Decision. This Record of Decision included a description of the background for the project, a statement of the decision made, synopses of other alternatives considered, the basis for the decision, findings on impairment of park resources and values, a description of the environmentally preferable alternative, a listing of measures to minimize environmental harm and an overview of public and agency involvement in the decision-making process.

Subsequent actions

Since publication of the Final EIS/Fire Management Plan the National Park Service has conducted activities in accordance with the plan in order to protect lives and property from wildfire. These activities include 1) the development of a Community Wildfire Protection Plan, 2) fire suppression activities, and 3) fuels management actions on NPS land.

Community Wildfire Protection Plan

From 2009 – 2012, the National Park Service collaborated with Los Angeles County on the development of a Community

Wildfire Protection Plan (CWPP) for the Santa Monica Mountains. This plan guides the actions of local fire safe councils (FSCs), private landowners, land management agencies, and local emergency service providers in their efforts to reduce wildfire risks and hazards to human lives, improvements, and natural values in the Santa Monica Mountains. In addition, the CWPP:

- Identifies strategies to reduce structure ignitibility while protecting the environmental integrity of the Santa Monica Mountains wildlands.
- Identifies priority projects to reduce risks and hazards from wildfire at the neighborhood or community scale, while protecting conservation values in the Santa Monica Mountains.
- Provides community input to public land management within Santa Monica Mountains National Recreation Area.
- Meets community collaboration requirements under the National Fire Plan and other government funding sources, in order to qualify for public funds allocated to this purpose (NPS 2013g).

Subsequent to the completion of the CWPP, several communities received grant funds to assist with their fire prevention plans.

Fire Suppression

All wildland fires within Santa Monica Mountains Recreation Area (SMMNRA) receive full suppression action through immediate response by initial attack resources.

The protection area within the SMMNRA boundary consists of federal, state, county, city and private property. The protection of National Park Service land is the responsibility of SMMNRA. Ventura County Fire, Los Angeles County Fire and Los Angeles City Fire have protection responsibility for state, county, city and private property within their jurisdictions. These agencies also provide immediate assistance to fires originating on NPS lands through cooperative fire agreements.

SMMNRA has two wildland fire engines which are available to respond to these incidents. One of these engines is a large Type 3 wildland engine and the other is a smaller Type 6 wildland engine.

Fuels Management

Park fuels management in the Santa Monica Mountains is focused and strategic. The objective is to maximize the effectiveness for protecting lives and property and minimize impacts to natural resources.

A time-tested method used at NPS facilities within the Santa Monica Mountains to protect lives and property is to perform fuel modification and create a defensible space. Along with hardening structures from heat and embers, adequate defensible space helps prevent structure ignition from direct flame impingement and radiant heat, while providing a safer environment for firefighters. Defensible space treatments are required for Park structures.

Appendix H: San Gabriel Watershed and Mountains Special Resource Study & Environmental Assessment Findings and Recommendations

From Finding of No Significant Impact (October 2012)

The San Gabriel River Watershed Study Act (P.L. 108-042, July 2003) authorized the National Park Service (NPS) to conduct a special resource study of (1) the San Gabriel River and its tributaries north of and including the city of Santa Fe Springs, and (2) the San Gabriel Mountains within the territory of the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy. The final study report and selected alternative was transmitted to Congress in April 2013

Study Findings

Evaluation of Nationally Significant Resources

The NPS has determined that two regions of the study area are nationally significant under the National Park Service New Area Studies Act criteria; the San Gabriel Mountains and the Puente-Chino Hills. The San Gabriel Mountains and foothills are nationally significant for their geologic resources, high biodiversity, dynamic river systems, and a long history of scientific study and discovery. The active mountain system has created scenic and unusual landscapes that support a high level of ecological diversity and contain a uniquely diverse assemblage of geologic resources and features. Nationally significant cultural resources include the Mount Wilson Observatory and San Dimas Experimental Forest. The Puente-Chino Hills contain a high level of biodiversity and outstanding examples of southern California communities, including coastal sage scrub, one of the most endangered plant communities in California, and the best remaining stands of California walnut-dominated forests and woodlands in their southern limit of distribution.

Evaluation of Suitability

This study concludes that portions of the San Gabriel Mountains and Puente-Chino Hills, as described in the draft study report, are suitable for inclusion in the national park system, based upon an evaluation of the study area resources and their relative quality, character, and rarity. Together, the San Gabriel Mountains and Puente-Chino Hills contain a combination of themes and resources not found in any national park unit or comparably managed area.

Evaluation of Feasibility

The study concludes that a collaborative partnership-based park unit, which respects the complex mix of land use, ownership, and regulatory authority in the study area, is feasible. Opportunities for collaborative management with local, state and federal managers to protect natural and cultural resources, to provide recreation, public access, interpretation and educational opportunities, and other compatible uses in a partnership-based park unit have been demonstrated to exist. A large traditional national park unit, owned and operated solely by the National Park Service, is determined to be infeasible.

Need for NPS Management

The study concludes that a collaborative management approach which includes a leadership role for the National Park Service is a superior management option for meeting the complex conservation and recreation needs of the study area. In particular, the NPS has the ability to work in a coordinated fashion, on a regional basis, to address equitable access to open space, protection of significant resources, and interpretation and education of significant resources. Existing NPS assistance programs are currently insufficient to address these needs in the study area.

Alternatives Analyzed

Four alternatives were analyzed in the San Gabriel Watershed and Mountains Draft Special Resource Study and Environmental Assessment. The alternatives are based on the purpose and need for the project and are consistent with existing laws, NPS policy and the special resource study legislation.

- **No Action Alternative: Continuation of Current Management.** Public land management agencies and local governments would continue their land management, visitor services, public education, recreation and interpretive programs at approximately the current levels of activity and funding, according to current plans. Existing cooperative management efforts would continue. The National Park Service would have no role in the study area beyond the existing segments of two national historic trails, some ongoing technical assistance from the Rivers, Trails and Conservation Assistance Program, and limited financial assistance through the Land and Water Conservation Fund.

- **Alternative A: San Gabriel Mountains National Recreation Area**. Congress would designate the San Gabriel Mountains unit of the Angeles National Forest (Angeles NF) as a National Recreation Area (NRA) that would continue to be managed by the U.S. Forest Service (USFS). The designation would bring additional recognition, tools, and support to the Angeles NF in order to steward watershed resources and ecosystems, and improve recreational opportunities. The National Park Service would have no role in the NRA beyond a continuation of the informal partnership between the U.S. Forest Service and Santa Monica Mountains NRA.

- **Alternative C: San Gabriel Watershed National Recreation Area**. Congress would designate the upper San Gabriel River watershed within the Angeles NF and a half-mile corridor around the San Gabriel and Rio Hondo rivers within the study area as a National Recreation Area to be managed by a voluntary partnership of agencies and organizations with land and interests in the designated area. The primary roles of the NPS would be coordination of the partnership and taking a lead role in coordinating interpretative and educational messages about significant resources. Each partner and other jurisdictional authorities would retain land ownership, management, and decision-making authority for lands that they own. The partnership would work to create new recreational and open space opportunities that are compatible with maintaining watershed values, water supply, flood protection, and habitat values.

- **Alternative D: San Gabriel Region National Recreation Area**. Congress would designate the San Gabriel Mountains unit of the Angeles NF, adjacent foothill areas with ecological resource values, areas near the San Andreas Fault, portions of the western Puente Hills, and half-mile corridors along the San Gabriel and Rio Hondo rivers as a National Recreation Area. The NRA would be managed much the same as described under alternative C, under a partnership comprised of agencies and organizations with interests in the area. The NPS role would be essentially the same as in alternative C, but with the addition of a technical assistance program to provide conservation and recreation planning assistance to interested public agencies, private landowners, and organizations beyond the NRA boundaries to create and connect parks, conserve habitat and provide new recreational experiences throughout the region.

The Selected Alternative

Concept

The most effective and efficient alternative is primarily a combination of management concepts from alternative A (San Gabriel Mountains National Recreation Area) and alternative D (San Gabriel Region National Recreation Area), as presented in the San Gabriel Watershed and Mountains Draft Special Resource Study. Some additional refinements have been made to reflect public concerns, provide for efficient management, and to take advantage of new authorities provided to the National Park Service (NPS) and the U.S. Forest Service (USFS) through the Service First authority (made permanent in December 2011).

The selected alternative would establish a San Gabriel unit of the Santa Monica Mountains National Recreation Area which would provide the NPS, and other land management agencies and organizations with guidance and direction to work together in new ways. Partnership arrangements among federal and state agencies, local governments, non-profit organizations, and area landowners would be the primary means to achieve the conservation, recreational, and educational goals of the San Gabriel unit. The Angeles National Forest (Angeles NF) would not be included in the San Gabriel unit. The NPS and USFS would work in partnership through the Service First Authority and legislative guidance would provide additional support and authorities for the Angeles NF to steward resources and improve recreational opportunities.

Specifically, components of the selected alternative would include:

San Gabriel unit of the Santa Monica Mountains NRA (San Gabriel unit). The San Gabriel Mountains foothills, San Gabriel and Rio Hondo river corridors and the western Puente Hills (alternative D south of the Angeles NF) would be established as an additional unit of the Santa Monica Mountains NRA. The NPS and numerous other agencies and organizations with land and interests in the area would: 1) work collaboratively to protect significant resources, restore ecological communities, and improve recreational opportunities; 2) provide technical assistance to willing communities for conservation planning to extend open space connections and form a network of parks, habitats, and open spaces; and 3) offer new educational and interpretive opportunities.

Angeles National Forest. The selected alternative would also bring additional recognition, tools, and support to the Angeles NF in order to steward watershed resources and ecosystems and improve recreational opportunities. In lieu of a new designation for the Angeles NF, this guidance would: 1) reaffirm the primary importance of the Angeles NF in preserving watershed and natural resources, while continuing to provide for multiple use management; and 2) prioritize funding for resource protection, recreation, and education, and establish mechanisms to increase funding for facilities, maintenance, ecological restoration, visitor management; and offer new educational programming, and stewardship activities. This would be accomplished without a national recreation area designation on the Angeles NF.

Collaborative Federal Management. The NPS and USFS would collaborate through the Service First authority and other mechanisms to protect the significant resources of the San Gabriel watershed and mountains, provide high quality recreation and education opportunities, and assist the surrounding communities in providing community-based recreation and conservation opportunities. The NPS and the USFS would work together:

- To explore opportunities to protect and enhance interconnected ecosystems essential for long-term viability of significant natural resources.



Map of the Selected Alternative for the San Gabriel Study

- To help communities provide close-to-home outdoor recreation, conservation and education opportunities for their residents, as well as to better connect to the nearby national park and national forest areas.
- To provide an array of seamless outdoor experiences in the San Gabriel watershed and mountains.

Proposed Area

The San Gabriel Unit

The San Gabriel unit of the Santa Monica Mountains NRA would include:

- The San Gabriel Mountains foothill areas in the San Gabriel Valley with ecological resource values. Areas with ecological resource values include designated critical habitat for federally listed threatened or endangered species, and areas within one of the Los Angeles County proposed significant ecological areas;
- A half-mile corridor around the San Gabriel and Rio Hondo rivers from the Angeles NF boundary south to Santa Fe Springs; and
- Portions of the western Puente Hills with ecological resource value and recreational potential (areas west of Harbor Boulevard). This primarily includes lands owned/or and managed by the Puente Hills Habitat Preservation Authority and lands proposed by Los Angeles County to be included in the Puente Hills Significant Ecological Area. The Puente Hills Landfill would not be included in the boundary. However, at some time in the future, the NPS and the Puente Hills Habitat Preservation Authority could enter into management agreements with the Sanitation Districts of Los Angeles County to provide recreational opportunities in this area.

The San Gabriel unit would include approximately 49,000 acres of land; approximately 37% of this area is already protected for conservation or recreation by existing agencies and organizations.

Angeles National Forest

The San Gabriel Mountains, within the Angeles NF, are also addressed in the selec ted alternative. However, no new designation would be applied to this area.

Management

San Gabriel Unit

The San Gabriel unit of the Santa Monica Mountains NRA would be managed in partnership with agencies and organizations with land and interests in the area. Agencies and organizations that own and manage land within the San Gabriel unit would continue to manage their lands according to their own policies and regulations. NPS policies would only apply to lands that the NPS acquires. As much of the land within the NRA is currently in public ownership and much of the remaining land is comprised of commercial and residential uses inappropriate for NPS management, land acquisition by the NPS would be limited.

The San Gabriel unit partners could include, but would not be limited to, the following agencies: the U.S. Forest Service, the National Park Service, the Lower Los Angeles and San Gabriel Rivers and Mountains Conservancy, the Puente Hills Habitat Preservation Authority, the U.S. Army Corps of Engineers, the California Department of Parks and Recreation, the California Department of Fish and Game, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, Los Angeles County, the Santa Monica Mountains Conservancy, the Wildlife Corridor Conservation Authority, the Mountains and Recreation Conservation Authority, and the Watershed Conservation Authority. Local communities/cities could also participate in the partnership. Through cooperative management agreements, partners would be able to provide coordinated educational and recreational programming, and share funding, staff, and facilities. In existing public land areas, interagency agreements could augment agency staffing to manage heavily used areas providing higher levels of visitor services, education, and safety. Other partnerships could also be established, such as with community-based organizations and tribal groups.

NPS Role. The NPS would take a lead role in coordinating partnership-based activities within the San Gabriel unit. Through cooperative management agreements, the NPS could also provide educational, interpretive, law enforcement and other services to partner agencies. The NPS would also take a lead role in providing coordinated interpretative and educational messages about the significance of the San Gabriel watershed and mountains for existing nature centers, museums, park programs, etc.

The NPS would have no land use regulatory authority for lands that it does not own. As funding permits, the NPS would be authorized to acquire lands from willing sellers within the San Gabriel unit to protect significant resources or for operational purposes.

The NPS would offer technical assistance to interested public agencies, private landowners, and organizations to create and connect parks, conserve habitat, provide new recreational experiences, and foster a sense of regional identity. The NPS could also assist in organizing volunteer programs within the San Gabriel unit and on the Angeles NF.

Angeles National Forest

The Angeles NF would continue to be managed by the USFS according to existing guiding policies. Additional guidance would authorize the USFS to enter into cooperative management agreements with local agencies and conservancies to protect biodiversity and watershed resources, interpret significant resources, enhance recreational opportunities, and provide more educational and interpretive opportunities within San Gabriel Mountains. In addition, the Angeles NF would have the ability to accept donations from philanthropic and partner organizations to improve facilities and resources.

Service First Authority. Legislative guidance would also direct the USFS and the NPS to engage in partnership efforts and interagency coordination to protect the significant resources of the San Gabriel watershed and mountains, provide high quality recreation and education opportunities, and assist the surrounding communities in providing community-based recreation and conservation opportunities. Such partnerships could be facilitated through the Service First authority and other mechanisms.

The laws creating the Service First authority (December 2011) give the Secretaries of the Interior and Agriculture the authority to establish programs involving certain land management agencies to:

- Conduct activities jointly or on behalf of one another;
- Collocate in federal offices or leased facilities; and
- Make reciprocal delegations of their respective authorities, duties and responsibilities
- Make transfer of funds and reimbursement of funds on an annual basis, including transfers and reimbursements for multi-year projects.

The Service First authority provides for interagency operational efficiency in attaining shared goals and missions, allows agencies to develop programs and projects tailored to meet shared objectives, allows agencies to share equipment, facilities and other resources to accomplish mutually agreed-upon work, and allows the re-delegation of staff authorities, duties and responsibilities among participating Service First agencies (NPS, USFS, BLM, FWS). Execution of partnership efforts is achieved through a Service First agreement, which documents agency commitment to accomplish mutual interest. Allocation of specific funding can be identified to implement and accomplish programs and projects outlined in a Service First agreement.

Existing Agencies, Regulatory Authorities, and Land Use

San Gabriel Unit

Much of the land within the proposed San Gabriel unit (approximately 37%) is already protected by various agencies and organizations. The National Park Service recognizes that existing public agencies, private conservation organizations, and individuals successfully manage important natural and cultural resources and recreational opportunities within the proposed San Gabriel unit. The NPS applauds these accomplishments and actively encourages the expansion of conservation activities by state, local, and private entities and by other federal agencies.

Retention of Local Land Use and Existing Regulatory Authorities. The designation of an NPS national recreation area unit would not establish additional regulatory or land use authorities over local governments. The NPS is not a regulatory agency. NPS land management policies and regulations would only apply to lands that the NPS acquires. The NPS would only consider acquiring land on a limited basis from willing sellers. The selected alternative would respect existing general plans and local zoning, as well as state and local laws and policies for lands that are not federally owned.

Protection of Water Supply, Flood Protection, and Sanitation Infrastructure Facilities and Functions. The Los Angeles metropolitan region has highly complex systems of public infrastructure to transport and store local and regional water supplies. In addition, numerous facilities are necessary to treat wastewater and manage solid waste. Many of these facilities are located on or near the San Gabriel River. The San Gabriel River Watershed Study Act of 2003 (P.L. 108-042) directed that the study consider regional flood control and drainage needs and publicly owned infrastructure such as wastewater treatment facilities. The study recommends that any resulting legislation ensure that infrastructure designed for flood protection, storage and transport of water supplies, treatment of water and wastewater, and management of solid waste would be unaffected by the designation. This includes exemption from 16 U.S.C. § 460l-22(c) (prohibition of solid waste disposal operations in national parks) for existing solid waste facilities and operations, such as landfills and transfer stations, within the San Gabriel unit.

The selected alternative would retain existing water rights. Management of water supply and treatment plants would continue under current authorities. The proposed San Gabriel unit designation would not entail any new or future beneficial uses or requirements for water supply, water quality, or air quality regulations.

Private Property Rights. Any legislation proposed to implement study recommendations should specify that eminent domain would not be used for land acquisition within the San Gabriel unit. The NPS would only consider acquiring land on a limited basis from willing sellers. Designation would not impact local land use authority over lands not owned by the NPS.

Fire Protection. Fire protection would remain the responsibility of existing federal, state, and local agencies (Los Angeles County, U.S. Forest Service, California Department of Forestry and Fire Protection). The San Gabriel unit partnership could work together to take a pro-active approach to coordinated resource management to reduce catastrophic fires.

Angeles National Forest

U.S. Forest Service management of existing Angeles NF lands would continue. USFS policies would continue to be applied to management of these lands.

Education and Interpretation

San Gabriel Unit

Through new interpretive and educational programs, the NPS would engage people of all ages in learning about the significant natural and cultural resources within the San Gabriel watershed and mountains. Examples of interpretive messages would include the history and importance of water resources, regional biodiversity, the geological significance of the San Gabriel Mountains, Native American history and prehistory, the role of fire on the landscape, and early California settlement.

The NPS would coordinate a voluntary information network to partner with established environmental education centers, visitor centers, etc. throughout the watershed to help augment and enrich interpretive and educational programming related to the significance of the San Gabriel watershed and mountains. The primary role of the NPS within the San Gabriel unit would be to lead the effort to provide coordinated interpretive messages and educational programs. The NPS would also work with partners to develop accessible interpretive and educational materials, including multi-lingual information and signs, to reach broader audiences.

In addition to programs conducted within the San Gabriel unit, NPS staff would coordinate with local school districts and area youth organizations to conduct environmental stewardship programs and engage youth in learning about the natural world around them. When needed and as funding permits, new facilities and programs could be developed to support educational efforts. The NPS Junior Ranger program could be promoted for school-aged children. There are also opportunities to inspire youth about the rich cultural heritage of the region.

Angeles National Forest

The Angeles NF would be recognized for its nationally significant resources associated with the San Gabriel Mountains. Working through Service First agreements, the USFS and

the NPS would provide more interpretive information about significant resources and offer new educational programs. Educational programs would emphasize to visitors the value of watershed resources and how to recreate in a way that is compatible with protecting such resources. New opportunities for educational programs associated with the San Dimas Experimental Forest would be explored.

Recreational Opportunities and Access

San Gabriel Unit

Within the San Gabriel unit, a variety of recreational opportunities would continue to be available to the public. Many communities in the region, however, lack appropriate access to park and recreational resources. Recreational uses and activities would be determined by the existing land management agency. The NPS and partner agencies would seek to improve recreational access and opportunities in urban areas that are deficient in recreation and park lands by offering assistance in planning for close-to-home recreational opportunities, better trail access, and improved public transportation options to recreational areas. Additionally, the NPS and partner agencies would explore opportunities to restore vacant or unused land to provide new recreational opportunities.

The NPS and partners would work together to target underserved and disadvantaged communities for engagement in the opportunties for and benefits of outdoor recreation. Children in communities that do not have adequate access to outdoor recreation tend to have higher rates of childhood diseases related to obesity such as diabetes. The NPS would conduct outreach to local communities, organizations, and schools to promote opportunities for healthy recreation in the San Gabriel unit.

The NPS would also work with partners to seek ways to improve the recreational experience in more heavily impacted areas by providing more education, improving facilities, improving maintenance and law enforcement, and enhancing visitor management to reduce impacts. Improved recreational experiences in more rural areas could focus on protecting the rural recreational experience by providing better trail connections and improved equestrian staging areas.

The voluntary information network would identify parks and sites with recreational and learning opportunities. This network would be expansive, including sites with recreational and learning opportunities associated with the San Gabriel River watershed, the Puente Hills, and the San Gabriel Mountains. At each site, visitors could find maps and guides linking one site with others pertaining to the same or related themes.

Many agencies are currently working to improve accessibility, as is required by the Americans with Disabilities Act. The NPS would work with partners to improve recreational access to the area's parks and public lands for persons with disabilities.

Angeles National Forest

Recreation is the primary use in the Angeles NF. With over 3 million annual visitors, the Angeles NF has one of the highest national forest visitation levels in the nation. Over the past ten years, funding for recreation, interpretation, and education has remained flat. Increased attention and focused management resulting from new legislative directives may encourage additional or reprioritized federal funding for enhancing recreation in the San Gabriel Mountains. This could include improved visitor management in heavily used recreational areas as a result of more forest rangers, better facilities, improved trail connections and trailheads, better educational efforts, and new approaches to manage visitation.

Existing recreational opportunities would remain on the Angeles NF pursuant to USFS established rules and regulations. Future decisions regarding appropriate recreational opportunities would continue to be determined by the USFS, including administration of any recreational special use permits such as for recreational residences and ski areas.

New partnership opportunities may also assist the Angeles NF in fundraising for improved recreational experiences and planning for recreational connections (e.g. trails, bicycle paths). The NPS and USFS would partner and work together on recreational opportunities on the Angeles NF through Service First agreements. Such agreements allow the two agencies to share staff, funding, and offices to achieve mutual objectives.

Resource Protection (Ecological Communities and Cultural Resources)

The selected alternative would emphasize protecting significant resources associated with the San Gabriel Mountains and Puente Hills.

San Gabriel Unit

The NPS would facilitate opportunities to work in collaboration with resource management agencies and organizations to conserve and enhance resources through research, cooperative management, monitoring, and restoration. Ecological communities could be enhanced by additional scientific knowledge, expertise, and technical assistance.

The NPS and partner agencies would work together to identify opportunities to protect ecosystems and wildlife corridors. For example, the San Gabriel Mountains and Puente-Chino Hills are refuges for rare and endangered species. These species need to be able to move to and from these open space areas, particularly in the case of wildfire events and for adaptation associated with climate change. Better ecosystem connectivity also fosters greater biodiversity. The NPS and partner agencies would seek to leverage additional funding for ecological restoration and wildlife habitat conservation efforts.

Coordinated cultural resource management would also be an emphasis. The NPS would seek to document, protect and interpret cultural resources within the San Gabriel unit. Such efforts would improve the ability of the NPS to develop interpretive materials and programming related to cultural resources.

Angeles National Forest

The Angeles NF would continue to balance use and resource protection in accordance with its multiple-use policy. Legislative guidance could affirm the original intent of the national forest to protect watershed resources. Legislation could bring additional, tools, and resources to the Angeles NF in order to steward the significant geological and biological resources associated with the San Gabriel Mountains. For example, the San Gabriel Mountains function as a refuge for many rare and endangered species. To protect the habitats and ecosystems associated with these species, the USFS could enter into management agreements with non-federal agencies and organizations to protect habitat that spans multiple jurisdictional boundaries, providing opportunities for the dispersal of wildlife and plants within the forest and into other areas. Protection of habitat across the region would also benefit wildlife and plant adaptation to climate change. In general, a higher priority would be placed on ecological restoration.

The San Gabriel Mountains are rich in cultural resources including archeology, Native American resources, historic recreation sites, historic mining sites, architecture, and historic flood protection structures. New resources could be allocated to document, protect, and interpret cultural resources in the San Gabriel Mountains. Programs could be designed for the public to experience the cultural, historical, and spiritual value of the San Gabriel Mountains.

Operations and Maintenance

San Gabriel Unit

Existing agencies would continue to be responsible for the operation and maintenance of their lands and facilities. The NPS would be responsible for operations and maintenance of lands which it acquires.

Staffing. Given NPS budget constraints, it is likely that the San Gabriel unit would initially have a small staff, or rely on support from existing staff at Santa Monica Mountains NRA. However, funding would likely increase over time, subject to Congressional budget priorities. Soon after establishment, the NPS would complete a unit management plan that would identify park priorities, management emphases, and required NPS staffing for a 15-20 year timeframe.

Because the San Gabriel unit would be managed as part of the Santa Monica Mountains NRA and managed in partnership with other agencies, less staff would be required than what would be expected in a traditional national park. Partnership parks typically require staff to handle park coordination and outreach, assist partners with conservation planning, and provide interpretive and educational programs.

Based on comparisons of staffing levels for existing partnership parks of similar size and with small NPS landownership, the following types of staff might be recommended for the selected alternative. Some positions would be shared with the Santa Monica Mountains NRA staff based in Thousand Oaks, CA.

- Partnership Specialist
- Unit Manager
- Administrative Assistant
- Visitor Use Assistant
- Interpretive Park Rangers
- Law Enforcement Park Rangers
- Teacher Ranger
- GIS Technician
- Volunteer/Outreach Program Coordinator
- Education Program Specialist
- Cultural Resource Specialist
- Outdoor Recreation Planner/Community Planner
- Wildlife Ecologist
- Biological Technician

Through Service First or cooperative management agreements, the NPS and other partner agencies could share staff, facilities, and funding to assist in the operations and maintenance of heavily used visitor areas. For example, the NPS could provide rangers to supplement USFS staff in high use areas of the Angeles NF. The NPS and partners agencies could also leverage funding and resources to improve existing facilities or provide new facilities where necessary.

The NPS would coordinate new partnerships and facilitate the development of more volunteer programs to assist in the maintenance of facilities, preservation/restoration efforts, and interpretation of significant resources. Additionally, the NPS would provide opportunities for job training and conservation stewardship programs for youth and community members.

Land Acquisition. Lands within the San Gabriel unit would remain under their current jurisdictions, with each land management agency continuing to fund its own operations. Approximately 37% of the land in the proposed NRA is already protected for recreation and conservation by partner agencies (18,500 of approximately 49,000 acres). Much of the remaining lands are comprised of commercial and residential uses that would not be appropriate or feasible for NPS land acquisition. The NPS could request funding for land acquisition for acquisition of areas with resource significance such as a historic site or open space with native habitat. NPS land acquisition funding is extremely limited. Partner agencies may also pursue

land acquisition within the San Gabriel unit. The NPS would be directed to identify priority parcels for acquisition (through donation or purchase) within two years of designation.

Operational and Visitor Facilities. Construction of new administrative facilities for NPS operations and management would not likely be required to support the proposed San Gabriel unit. Some staff and operational work could be accomplished at existing facilities within the Santa Monica Mountains NRA. However, given the distance to the San Gabriel Valley, an operational presence would also be necessary in the San Gabriel unit, particularly for education, outreach, and agency coordination positions. Given the existing amount of office space available in and near the proposed San Gabriel unit, it is likely that the NPS could share administrative and operational facilities with partner agencies or lease other office space available in the area. There may also be opportunities to adaptively reuse an historic building or property if the NPS acquired land that contained such facilities. The NPS could also use partner facilities or adaptively reuse buildings to provide visitor facilities. The Angeles NF and various local and state park and recreation agencies also operate and manage existing visitor facilities. If established, the NPS would identify specific operational and visitor facilities needs through a unit management plan.

Angeles National Forest

Legislative guidance may direct additional funding for operations and maintenance of the Angeles NF to provide more rangers and other staff in heavily used visitor areas. New volunteer programs would be developed to assist in the maintenance of facilities, preservation/restoration efforts, and interpretation of significant resources.

Use of the Service First authority would improve the customer service, effectiveness and efficiency of the NPS and Angeles NF in attaining shared goals by authorizing the two agencies to use each other's staff, equipment, facilities, and other resources, as appropriate, to accomplish mutually agreed-upon work.

Funding and Costs

The selected alternative would rely on the funding streams of partner agencies, as well as newly authorized NPS funding. Legislative guidance for the Angeles NF may authorize additional funding. Working in partnership with the NPS and other agencies, partners may be able to explore new fundraising opportunities to achieve resource restoration and protection goals, as well as provide improved recreation, interpretation, and educational facilities and programs.

San Gabriel Unit

The NPS would need additional federal funding for its administrative, educational, technical assistance, and interpretive roles. In addition, the NPS and partner agencies could establish a fundraising organization, be a coordinating body for existing grant programs, and work together to leverage funds from a variety of sources (e.g. state bonds, Land & Water Conservation Fund) to increase and prioritize funding for projects and staff in the San Gabriel Watershed and Mountains. Partner organizations could also work together to leverage private funding and donations.

NPS operating costs for national recreation areas vary widely, depending on the amount and type of resources managed, number of visitors, level of programs offered, safety and security issues, and many other factors. While no formal estimates of operating costs have been completed for this study, budgets from comparable NPS units illustrate the potential range. Boston Harbor Islands NRA, Chattahoochee River NRA, Mississippi National River and Recreation Area, and Santa Monica Mountains NRA are all partnership-based NPS units comprised primarily of non-NPS lands. The annual operating base budgets for these units range from $1.22 million to $8.9 million. Based on the size of the area, and the types of services and assistance offered through the partnership, the cost of NPS operations for the San Gabriel unit could be expected to be $1 to $3 million. The operational budget would primarily fund salaries. Additional costs would include leasing or maintaining administrative space, interpretive and educational materials or media, and maintenance of any NPS-owned facilities or lands.

Planning and Implementation Projects. The San Gabriel unit would be eligible to receive funding for planning and projects through the NPS. For example, soon after establishment, the NPS could provide initial planning funds for a unit management plan which would define management priorities, more specific actions, and funding needs for the San Gabriel unit. The unit management plan would be completed in collaboration with partners. A unit management for the size and scale of unit proposed in the selected alternative would likely take 4 to 5 years to complete and could cost between $500,000 and $700,000. Additional NPS funding may also be available for specific projects such as trail planning and development and interpretive materials. A unit management plan would identify more specific implementation needs.

Many NPS partnership parks also rely on private fundraising through "friends" groups. The funds raised through these groups can be used to supplement the operating budgets of the partners. At Boston Harbor Islands NRA, for example, the Boston Harbor Island Alliance is a nonprofit organization authorized through legislation to raise and manage funds for facilities and programming on partner lands. In 2008, the Alliance spent $2.25 million for visitor programming and capital improvements within the NRA on lands owned by state, federal, municipal, and private entities. In addition, the Alliance received $5 million for environmental mitigation projects over several years, to be used on partner lands.

Angeles National Forest

In order to accomplish the goals of the selected alternative, additional funding would be required, either through appropriations, partnerships, or philanthropy. The increased attention and a narrower management focus may encourage additional or reprioritized federal funding, over time, for the Angeles NF to achieve resource restoration and protection goals, as well as provide improved recreation, interpretation, and educational facilities, and programs.

The Angeles NF receives the majority of its funds through allocations appropriated by Congress. In FY2011, the Angeles NF received $32 million in funding for the entire forest. Of this amount, 60%, or $19.3 million, was budgeted for wildfire preparedness and fuels reduction, with the remaining 40%, or $12.7 million, covering all other operations. Of this funding, $2.9 million was appropriated for recreation, planning, resources, and wildlife management. Capital Improvement funds which includes facilities, trails, and roads maintenance totaled $900,000 for the entire forest. When adjusted for inflation, the Angeles NF has had a continuing drop in non-fire operational funding since 1995. Within the study area, total funding for the Angeles NF for FY2011 is $7.4 million (non-fire). Of this amount, $1.7 million is allocated to recreation (700k), planning, resources, and wildlife management. Only $540,000 is allocated to capital improvements including facilities, trails, and roads maintenance, $78k of this is allocated for trail maintenance.

The Angeles NF does receive revenue from a variety of forest programs and users, especially use fees collected under the Recreation Enhancement Act (the Adventure Pass). This source of funding has become increasingly important, as it can be used for a wider range of purposes than reimbursable revenue, and has helped to supplement appropriated funds. However, the cost of enforcing and administering this program is almost equal to the revenue.

This study recommends that any resulting legislation provide for specific additional funding to be allocated each year for recreation, planning, visitor services, wildlife management, and resource protection. Without this legislative direction, the Angeles NF is not likely to experience an increase of appropriated funds to meet the objectives of the selected alternative.

Additional opportunities for increased funding exist from outside sources. Legislation could allow the USFS to accept direct donations and provide mechanisms for developing diverse partnerships with nonprofit fundraising, support or friends groups. The elevated visibility and attention of a new designation adjacent to the Angeles NF, coupled with an increased sense of identity for those living in the region, could enhance the ability of the Angeles NF to more successfully raise private funds and seek special appropriations for particular projects. Legislative guidance could also create new authorities to retain fees such a special use permits, etc. to fund forest operations and programs.

Acronyms and Abbreviations

ADA	Americans with Disabilities Act
ANF	Angeles National Forest
BLM	Bureau of Land Management
BOR	Bureau of Reclamation also U.S. Bureau of Reclamation
CAA	Clean Air Act
CCC	Civilian Conservation Corps
CDC	California Department of Conservation
CDFG	California Department of Fish and Game (agency name prior to change to CDFW)
CDFW	California Department of Fish and Wildlife
CDP	Census Designated Place
CDPR	California Department of Parks and Recreation, also California State Parks
CEDD	California Employment Development Department
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
COSCA	Conejo Open Space Conservation Agency
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
DMCA	Desert and Mountain Conservation Authority
ESA	Federal Endangered Species Act
FC	Species identified by the U.S. Fish and Wildlife Service as a candidate for listing under the Endangered Species Act
FE	(Federally listed endangered species) A species listed as endangered under the Endangered Species Act
FEIS	Final Environmental Impact Report
FLPMA	Federal Land Policy and Management Act of 1976
FMMP	Farmland Mapping and Monitoring Program
FR	Federal Register
FT	(Federally listed threatened species) A species listed as threatened under the Endangered Species Act
FHWA	Federal Highway Administration
GMP	General Management Plan (National Park Service)
IBA	International Bird Area
IRWMP	Integrated regional water management plan
JPA	Joint Powers Authority
JPL	Jet Propulsion Laboratory
LA	Los Angeles
LACFCD	Los Angeles County Flood Control District
LADPW	Los Angeles Department of Public Works
LADWP	(City of) Los Angeles Department of Water and Power
LWCF	Land and Water Conservation Fund
MRCA	Mountains Recreation and Conservation Authority

MWD	Metropolitan Water District
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NF	National Forest
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NHT	National Historic Trail
NM	National Monument
NP	National Park
NPS	National Park Service
NRA	National Recreation Area
NRCS	Natural Resources Conservation Service, United States Department of Agriculture
NRHP	National Register of Historic Places
NRT	National Recreation Trail
OHV	Off-highway Vehicles
PCT	Pacific Crest Trail
PEPC	National Park Service Planning, Environment and Public Comment Website
PL	Public Law
RCD	Resource Conservation District
RCPG	Regional Comprehensive Plan and Guide
RLC	Research Learning Center
RMC	Lower Los Angeles and San Gabriel Rivers and Mountains Conservancy or Rivers and Mountains Conservancy
RTCA	National Park Service Rivers, Trails and Conservation Assistance Program
SCAG	Southern California Association of Governments
SEA	Significant Ecological Area (Los Angeles County, Department of Regional Planning)
SHPO	State historic preservation officer
SMMC	Santa Monica Mountains Conservancy
SMMNRA	Santa Monica Mountains National Recreation Area
SP	State Park
SRS	Special Resource Study
TMDL	Total Maximum Daily Load (related to water pollutants)
USACOE	United States Army Corps of Engineers also U.S. Army Corps of Engineers
UNESCO	United Nations Educational, Scientific and Cultural Organization
USC	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service, U.S. Forest Service, Forest Service
USFWS	United States Fish and Wildlife Service, U.S. Fish and Wildlife Service, or Fish and Wildlife Service
WCA	Watershed Conservation Authority
WPA	Works Progress Administration
WRP	Water Reclamation Plant

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Core Study Team

The core study team included NPS planning staff based in the southern California region and the NPS Pacific West Regional Office Planning and Environmental Compliance Division. Core study team members were responsible for public involvement and outreach materials, research, writing and analysis related to study area resources, development of the alternatives, environmental compliance, and production of the draft study report.

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The extended study team included NPS Pacific West Regional Office and Santa Monica Mountains National Recreation Area staff that provided assistance and subject-matter expertise for specific aspects of the study.

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Contributions from Partner Agencies

As described above under resource analysis, partners assisted the study process by providing advice and guidance, resource information, and technical reviews. In addition, the Mountains Recreation Conservation Authority (MRCA) provided mapping assistance.



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