

DRAFT

San Bernardino Countywide Plan Biological Resources Existing Conditions

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REPORT USE, INTENT, AND LIMITATIONS

This Background Report was prepared to inform the preparation of the Countywide Plan. This report is not intended to be continuously updated and may contain out-of-date material and information. This report reflects data collected in 2016 and analyzed in 2016 and 2017 as part of due diligence and issue identification.

This report is not intended to be comprehensive and does not address all issues that were or could have been considered and discussed during the preparation of the Countywide Plan. Additionally, many other materials (reports, data, etc.) were used in the preparation of the Countywide Plan. This report is not intended to be a compendium of all reference materials.

This report may be used to understand some of the issues considered and discussed during the preparation of the Countywide Plan, but should not be used as the sole reference for data or as confirmation of intended or desired policy direction. Final policy direction was subject to change based on additional input from the general public, stakeholders, and decision makers during regional outreach meetings, public review of the environmental impact report, and public adoption hearings.

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ACOE	U.S. Army Corps of Engineers
BLM	Bureau of Land Management
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
DRECP	Desert Renewable Energy Conservation Plan
ESA	Endangered Species Act
HCP	habitat conservation plan
I-	Interstate
MSHCP	Multiple Species Habitat Conservation Plan
NCCP	natural communities conservation plan
NEPA	National Environmental Policy Act
NVCS	National Vegetation Classification Standard
RWQCB	Regional Water Quality Control Board
SANBAG	San Bernardino Associated Governments
SR-	State Route
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

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1 INTRODUCTION

The County of San Bernardino (County) spans several distinct ecoregions supporting a diverse assemblage of plant and wildlife species and vegetation communities and land covers. High species diversity in the County is due, in part, to the biogeographic differences and gradients among the Valley, Mountain, and Desert Regions of the planning area. This document summarizes the biological resources occurring in the County in order to provide a baseline for assessing potential impacts from the San Bernardino Countywide Plan (Countywide Plan). In summary, this report describes regulatory and planning aspects pertinent to San Bernardino County, special-status species, vegetation communities, habitat linkages, ecoregions, and general ecological and climatic conditions, as well as protected open space throughout the County.

1.1 Document Organization

Organization of this document includes the following sections:

- Section 1 details a brief introduction of the Countywide Plan and regions within San Bernardino County.
- Section 2 summarizes laws, regulations, policies, and planning pertinent to the biological resources component of the Countywide Plan.
- Section 3 provides the methodologies of how the biological existing conditions was compiled, including literature sources, database queries, aerial review, definitions, and vegetation mapping.
- Section 4 discusses the physical and biological conditions of the Desert Region, including climate, geology, soils, topography, hydrology, vegetation communities, and special-status species. A discussion of habitat linkages and protected and wilderness areas is also provided.
- Section 5 discusses the physical and biological conditions within the Mountain Region, including climate, geology, soils, topography, hydrology, vegetation communities, and special-status species. A discussion of habitat linkages and protected and wilderness areas is also provided.
- Section 6 discusses the physical and biological conditions within the Valley Region, including climate, geology, soils, topography, hydrology, vegetation communities, and special-status species. A discussion of habitat linkages and protected and wilderness areas is also provided.
- Section 7 contains a list of references cited in this document.

1.2 Regions of San Bernardino County

The County of San Bernardino is composed of three distinct regions: Desert, Mountain, and Valley. Figure 1, Jurisdictions in San Bernardino County, and Figure 2, Ecological Regions and Conservations Plans Map, depict the extent of the County and of each region.

The Desert Region is the largest of the three geographic regions. This region is north of the San Bernardino and San Gabriel Mountains and extends east to the Arizona state line. Kern and Los Angeles Counties are located to the west, with Inyo County and the Nevada state line to the north. Within this region there is an assemblage of low mountain ranges and desert floors, with the most conspicuous water features being the Mojave and Colorado Rivers.

The Mountain Region is situated between the Valley and Desert Regions and is composed of the San Gabriel and San Bernardino Mountain Ranges, separated by the Cajon Pass, a defining feature of the San Andreas Fault Zone. The communities include Mount Baldy and Wrightwood to the west, the City of Big Bear Lake to the east, and Forest Falls to the southeast. Runoff from the mountains provides the main water source for both the Santa Ana River and the Mojave River. Fluvial landforms consist of a series of creeks, streams, and rivers that drain into mountain lakes and the Valley and Desert Regions.

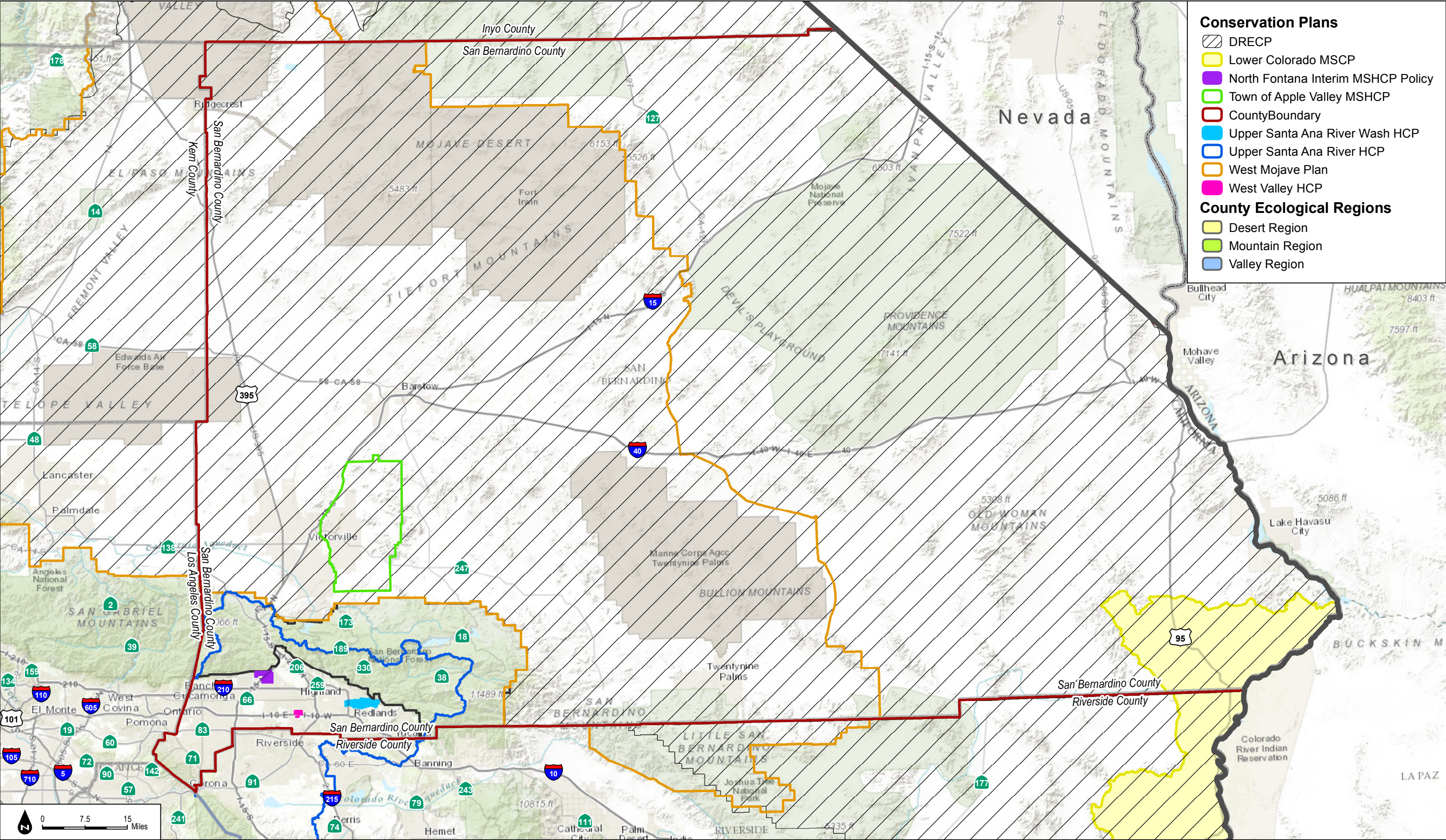
The Valley Region is the most populated of all three geographic regions. This region occupies the southwest portion of the County and extends to Riverside County to the south, Orange County to the southwest, and Los Angeles County to the west. This area contains the San Bernardino and San Gabriel Mountain foothills and valley floors. The most conspicuous water feature is the Santa Ana River, spanning over 50 miles within San Bernardino County.

1.3 County Jurisdiction

San Bernardino County is made up of a number of municipalities, federal lands, state lands, unincorporated areas, and other lands (Figure 1). The County of San Bernardino has jurisdiction on only a portion of the lands within the County limits, which means that County land use planning only occurs over a limited land base. Therefore, planning for growth and biological resource conservation within the County's jurisdiction will require close coordination with adjacent municipal planning authorities and landowners.

This report provides a summary of biological resources within the County; however, it focuses on those resources that are under County jurisdiction. A GIS layer depicting the jurisdiction of the County of San Bernardino was provided by the County and is used in this report to summarize the biological resources that fall under some level of control by the County.

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SOURCE: Bing Maps, 2016

San Bernardino Countywide Plan - Biological Resources

FIGURE 2

Ecological Regions and Conservation Plans Map

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2 REGULATORY AND PLANNING CONTEXT

The following is a description of the laws, regulations, policies, and planning pertinent to the biological resources component of the Countywide Plan. They can be applicable to portions of the County’s jurisdiction, depending on the geographic location, presence of sensitive plant communities, presence of habitat to support regulated species, presence of regulated waters, and other specific conditions. Due to their complexity and site specificity, the applicability of these laws, regulations, and policies are typically determined through a site-specific analysis.

2.1 Federal Regulatory and Planning Context

Federal Endangered Species Act

The federal Endangered Species Act of 1973 (ESA), as amended, is administered by the U.S. Fish and Wildlife Service (USFWS) for terrestrial plant and animal species and by the National Oceanic and Atmospheric Administration’s National Marine Fisheries Service for marine and anadromous species. The ESA is intended to be a means to conserve endangered and threatened species while also preserving the ecosystems that they rely on. The act defines an endangered species as “any species that is in danger of extinction throughout all or a significant portion of its range.” Under the ESA, it is considered unlawful to take any listed species; “take” is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct” (16 U.S.C. 1531–1544).

The ESA allows for incidental take of listed species under Section 7 and Section 10 exemptions. Under Section 7, federal agencies are required to consult with USFWS before taking any action that may threaten an endangered species. Section 10 exemptions apply to actions that do not require federal agency action other than the issuance of the incidental take permit, and these incidental take permits can be issued for listed species subsequent to the approval of a habitat conservation plan (HCP). An HCP must specify the level of impact that will result from the taking, the steps that will be taken to minimize and mitigate the impacts, the funding necessary to implement the HCP, a discussion of alternatives, and any other necessary measures required by the Secretary of the Interior.

USFWS-Designated Critical Habitat

USFWS has designated critical habitat within San Bernardino County for 19 listed species under the ESA. Critical habitat is designated when a geographical area is considered crucial to the survival of a threatened or endangered species. Once critical habitat is designated, to ensure that their actions will not destroy or adversely modify the constituent elements of critical habitat for

that species, federal agencies must consult USFWS on activities they plan to undertake, fund, or authorize. Special limitations on projects in critical habitat are limited to federal actions; however, the general protections of the ESA protect listed species from take regardless of where they are located.

Federal Land Policy and Management Act

The Federal Land Policy and Management Act of 1976, as amended, establishes public lands policy and management guidelines on public lands managed by the Bureau of Land Management (BLM). The act includes land use planning, range management, rights-of-way, and designated management areas.

The California Desert Conservation Area (CDCA) Plan was approved in 1980 in accordance with the Federal Land Policy and Management Act. The CDCA Plan provides for multiple use management of approximately 25 million acres, of which 10 million acres are managed by the BLM, falling within San Bernardino County and six other counties. The CDCA Plan has been amended numerous times, and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The CDCA Plan aims to protect biological, geological, paleontological, scenic, and cultural resources while allowing for a variety of land uses and activities.

Several major amendments to the CDCA Plan have been made in San Bernardino County, including the BLM Northern and Eastern Colorado Desert Coordinated Management Plan, BLM Northern and Eastern Mojave Desert Management Plan, and the BLM West Mojave Plan. The proposed Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (BLM 2015) would also serve as a major amendment to the CDCA Plan.

U.S. Forest Service

The San Bernardino National Forest lies in southwest San Bernardino County, dividing the Desert and Valley Regions. The U.S. Forest Service (USFS) has jurisdiction over these lands and manages them conservatively to ensure their long-term sustainability. The land management strategy employed by USFS follows their “multiple use” doctrine, and includes suitable commodity and commercial uses (USFS 2005a). Uses and actions proposed on national forest lands ultimately occur at the discretion of USFS. The Land and Resource Management Plan for the San Bernardino National Forest emphasizes sustainable use through the delineation of “land use zones” that identify allowable activities by zone, demonstrating the intent of multiple use management (USDA 2005b). USFS manages Angeles National Forest, which edges into San Bernardino County, in a similar fashion.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) declares a continuing federal policy “to use all practicable means and measures ... to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations.” NEPA also directs “a systematic, interdisciplinary approach” to planning and decision making and requires environmental statements for “major federal actions significantly affecting the quality of the human environment.” Implementation regulations by the Council on Environmental Quality (40 CFR 1500 et seq.) require federal agencies to identify and assess reasonable alternatives to proposed actions that would restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts. Federal agencies are further directed to emphasize significant environmental issues in project planning and integrate impact studies required by other environmental laws and executive orders into the NEPA process. The NEPA process should therefore be seen as an overall framework for the environmental evaluation of federal actions.

Bureau of Land Management

BLM manages a vast amount of public lands under its jurisdiction within San Bernardino County. The land management strategy for BLM contains the BLM Special-Status Species Policy (BLM 2008). Under this policy, BLM conserves and/or recovers special-status species and their associated ecosystems so that protections are no longer needed. Additionally, once a species is deemed sensitive, BLM must manage the species and its habitat with the goal of minimizing threats affecting the status of the species as well as improving the condition of the species’ habitat.

The Department of the Interior and BLM established the National Landscape Conservation System in 2000 to provide coordinated protection for the BLM’s conservation lands. The Omnibus Public Land Management Act of 2009 then congressionally established the National Landscape Conservation System, to “conserve, protect and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of future generations” (Public Law 111-11). Inclusion in the National Landscape Conservation System does not provide any new legal protections for the lands already designated as national monuments, conservation areas, wilderness study areas, scenic trails, or historic trails designated as a component of the National Trails System, components of the National Wild and Scenic Rivers System, or components of the National Wilderness Preservation System; however, it provides a single system to manage and organize conservation lands on a national scale.

USFWS—Migratory Bird Treaty Act

The Migratory Bird Treaty Act implements international treaties between the United States and other nations that protect migratory birds (including their parts, eggs, and nests) from being killed, hunted, pursued, captured, sold, and shipped unless expressly authorized or permitted.

USFWS—Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668 et seq.), enacted in 1940 and amended several times since then, prohibits anyone without a permit issued by the Secretary of the Interior from “taking” bald eagles (*Haliaeetus leucocephalus*), including their parts, nests, or eggs. BGEPA provides criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof.” BGEPA defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” “Disturb” means “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”

On September 11, 2009, the USFWS set in place rules (50 CFR Parts 13 and 22) establishing two new permit types: (1) take of bald eagles and golden eagles (*Aquila chrysaetos*) that is associated with, but is not the purpose of, the activity; and (2) purposeful take of eagle nests that pose a threat to human or eagle safety. Specifically, BGEPA authorizes intentional take of eagle nests where necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the nest prevents the use of a human-engineered structure; and/or the activity, or mitigation for the activity, will provide a net benefit to eagles. BGEPA allows inactive nests to be taken only in the case of safety emergencies.

As described in the USFWS Draft Eagle Conservation Plan Guidance dated January 2011 (USFWS 2011), the USFWS recommends that project proponents prepare an eagle conservation plan to avoid, minimize, and mitigate project-related impacts to eagles to ensure no net loss to the golden eagle population.

Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. 1251 et seq.) establishes legal requirements for the restoration and maintenance of the chemical, physical, and biological integrity of the nation’s waters.

Section 401

Section 401 requires that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a state certification that the discharge complies with other provisions of the CWA. The Regional Water Quality Control Boards administer the certification program in California.

Section 404

Section 404 establishes a permit program administered by the U.S. Army Corps of Engineers (ACOE) regulating the discharge of dredged or fill material into waters of the United States, including wetlands. CWA Section 502 further defines “navigable waters” as “waters of the United States, including territorial seas.” “Waters of the United States” are broadly defined in the Code of Federal Regulations, Title 33, Section 328.3, Subdivision (a) to include navigable waters; perennial and intermittent streams, lakes, rivers, and ponds; and wetlands, marshes, and wet meadows.

Implementing regulations by the ACOE are found at Title 33 of the Code of Federal Regulations, Parts 320–330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines and were developed by the U.S. Environmental Protection Agency in conjunction with the ACOE (40 CFR, Part 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

Executive Order 13112—Invasive Species

Executive Order 13112, signed in February 1999, established the National Invasive Species Council. This order requires agencies to identify actions that may affect the status of invasive species. It also directs federal agencies not to authorize, fund, or carry out actions that they believe are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that the agency has prescribed, it has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species, and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

Plant Protection Act of 2000

The Plant Protection Act of 2000 (7 U.S.C., Chapter 104) established a federal program to control the spread of noxious weeds. The secretary of agriculture is authorized to publish a list of plants designated as noxious weeds (7 U.S.C. 7712(f)). The movement of all such weeds in interstate or foreign commerce is prohibited except under permit.

Noxious Weed Act of 1974, as Amended

This act provides for the control and management of nonindigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health. Under this act, the Secretary of Agriculture was given the authority to designate plants as noxious weeds and to inspect, seize, and destroy products and to quarantine areas if necessary to prevent the spread of such weeds.

Lacey Act, as Amended

The Lacey Act (16 U.S.C. 3371–3378) protects plants and wildlife by creating civil and criminal penalties for a wide variety of violations, including illegal take, possession, transport, or sale of protected species.

Wild and Scenic Rivers Act

This act established a national system of rivers to be preserved in free-flowing condition, with their immediate environments protected. Congress selected certain rivers that possess outstandingly remarkable outdoor values. They established an initial system of eight rivers, and set up methods and procedures for adding new rivers to the system. There are three classifications of rivers in the system: wild, scenic, or recreational, depending on the level of development near the stretch of river.

2.2 State Regulatory and Planning Context

California Endangered Species Act

The California Endangered Species Act (CESA), administered by the California Department of Fish and Wildlife (CDFW), prohibits the take of plant and animal species designated by the California Fish and Game Commission as endangered, threatened, or candidates for listing as endangered or threatened in the State of California. State statutes enforced by the CDFW for the implementation of CESA are set forth in the California Fish and Game Code and Title 14 of the California Code of Regulations. The California Fish and Game Code defines “take” as to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill” (California Fish and Game Code, Section 86). The California Fish and Game Code prohibits the take of any state listed species without an incidental take permit from the CDFW or the authorization from the director providing that the incidental take permit provided by the USFWS under the federal ESA is consistent with CESA. California Fish and Game Code Section 2053 provides that it is impermissible for state agencies to approve projects that will “jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse

modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy.”

CESA authorizes incidental take of endangered, threatened, or candidate species given that take is incidental to otherwise lawful activity and other specific criteria are met. Take of fully protected species can be authorized if the species is conserved as a covered species under an approved natural communities conservation plan (NCCP).

California Environmental Quality Act

The California Environmental Quality Act (CEQA) establishes state policy to prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures. CEQA applies to actions directly undertaken, financed, or permitted by state lead agencies. Guidelines for implementation of CEQA (CEQA Guidelines) are found in the California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387.

Natural Community Conservation Planning Act

The Natural Community Conservation Planning Act (1991) provides the statutory framework for the creation of NCCPs, which provide long-term, landscape-scale protection for natural vegetation communities and wildlife diversity while allowing for continued permissible use and expansion of compatible land uses. The NCCP program supports collaborative planning and approval by involving local governments, state and federal agencies, environmental organizations, landowners, and members of the public. The NCCP framework is meant to support the provision of regional and subregional protection for species that inhabit designated natural communities. By planning regional conservation measures that focus on the long-term stability of wildlife and plant communities and including key stakeholders in the process, the program attempts to avoid the gridlock sometimes caused by the listing of species. Through an approved NCCP, incidental take authorization would be allowed for covered species whose conservation and management is provided for under the plan. The Town of Apple Valley Multiple Species Habitat Conservation Plan (MSHCP) is the only NCCP currently being planned in San Bernardino County.

California Native Plant Society

The California Native Plant Society (CNPS) maintains a list of special-status plant species based on collected scientific information. Designation of these species by the CNPS has no legal status

or protection under federal or state endangered species legislation (CNPS 2015). CNPS's California Rare Plant Ranks (CRPRs) are defined as follows: CRPR 1A (plants presumed extinct); CRPR 1B (plants rare, threatened, or endangered in California and elsewhere); CRPR 2 (plants rare, threatened, or endangered in California, but more numerous elsewhere); CRPR 3 (plants about which more information is needed – a review list); and CRPR 4 (plants of limited distribution – a watch list). In general, plants appearing on CRPR 1A, 1B, or 2 meet the criteria of Section 15380 of the CEQA Guidelines; thus, substantial adverse effects to these species would be considered significant.

California Fish and Game Code

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. In October 2011, Senate Bill (SB) 618 amended California Fish and Game Code provisions that relate to fully protected species. Prior to SB 618, CESA prohibited the take of species that have been listed as fully protected. The amendment allows for incidental take of fully protected species when a conservation plan has been approved and implemented to ensure protection of the species. Other exceptions in which CDFW may issue permits or licenses to authorize the take of fully protected species include scientific research and live capture and relocation of fully protected species pursuant to a permit for the protection of livestock. Furthermore, it is the responsibility of CDFW to maintain viable populations of all native species. To that end, CDFW has designated certain vertebrate species as species of special concern (SSC) because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

California Fish and Game Code, Sections 3503, 3503.5, and 3513

These California Fish and Game Code sections prohibit the taking and possessing of bird eggs and nests. The administering agency for the sections is CDFW.

Title 14 California Code of Regulations, Sections 670.2 and 670.5

These sections include listings of plant and animal species designated as threatened or endangered. The administering agency for the sections is CDFW.

Native Plant Protection Act

The Native Plant Protection Act of 1977 directed the CDFW to carry out the California Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants

as “endangered” or “rare” and protect endangered and rare plants from take. CESA expanded on the original Native Plant Protection Act and enhanced legal protection for plants, but the Native Plant Protection Act remains part of the California Fish and Game Code. To align with federal regulations, CESA created the categories of “threatened” and “endangered” species. CESA entered all “rare” animals into the act as “threatened” species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Because rare plants are not included in CESA, mitigation measures for impacts to rare plants are specified in a formal agreement between CDFW and the project proponent.

California Desert Native Plants Act

The California Desert Native Plants Act protects California desert native plants from unlawful harvesting on both public and privately owned lands within Imperial, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego Counties. The following native plants, or any part thereof, may not be harvested except under a permit issued by the commissioner or the sheriff of the county in which the native plants are growing: all species of the Agavaceae (century plants, nolinias, and yuccas); all species of the family Cactaceae; all species of the family Fouquieriaceae (ocotillo, candlewood); all species of the genus *Prosopis* (mesquites); all species of the genus *Parkinsonia* (paloverdes); catclaw acacia (*Acacia greggii*); desert holly (*Atriplex hymenelytra*); smoke tree (*Psoralea argyrea*); and desert ironwood (*Olneya tesota*), both dead and alive (provision 80073). This provision excludes any plant that is declared to be a rare, endangered, or threatened species by federal or state law or regulations, including, but not limited to, the California Fish and Game Code. The fee for the permit to remove any of these plants will not be less than \$1 per plant, except for Joshua trees (*Yucca brevifolia*), which will not be less than \$2 per plant.

Porter-Cologne Water Quality Control Act

The intent of the Porter-Cologne Water Quality Control Act (California Water Code, Section 13000 et seq.) is to protect water quality and the beneficial uses of water, and it applies to both surface and groundwater. Under this law, the California State Water Resources Control Board develops statewide water quality plans, and the Regional Water Quality Control Boards develop basin plans that identify beneficial uses, water quality objectives, and implementation plans. The Regional Water Quality Control Boards have the primary responsibility for implementing the provisions of both statewide and basin plans. Waters regulated under the Porter-Cologne Water Quality Control Act include isolated waters that are no longer regulated by ACOE. Developments that impact jurisdictional waters must demonstrate compliance with the goals of the act by developing stormwater pollution prevention plans, standard urban stormwater mitigation plans, and other measures in order to obtain a CWA Section 401 certification.

Lake and Streambed Alteration Program

Section 1602 of the California Fish and Game Code states that the applicant shall submit a complete Lake or Streambed Alteration Program notification package and fee to the CDFW if the proposed activity would:

- Substantially divert or obstruct the natural flow of any river, stream, or lake;
- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake (California Fish and Game Code, Section 1602).

Section 1602 of the Lake or Streambed Alteration Program is based on Title 14 of the California Code of Regulations, Section 720, which states that “for the purpose of implementing Sections 1601 and 1603 of the Fish and Game Code which requires submission to the department of general plans sufficient to indicate the nature of a project for construction by or on behalf of any person, governmental agency, state or local, and any public utility, of any project which will divert, obstruct or change the natural flow or bed of any river, stream or lake designated by the department, or will use material from the streambeds designated by the department, all rivers, streams, lakes, and streambeds in the State of California, including all rivers, streams and streambeds which may have intermittent flows of water, are hereby designated for such purpose.”

Title 14 of the California Code of Regulations, Section 1.72, defines streams, including creeks and rivers, as follows: “a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks, this includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation.” Title 14 of the California Code of Regulations, Section 1.56, defines lakes as including “natural lakes or man-made reservoirs.”

The Lake and Streambed Alteration Program is a California law that requires that any person, state, or local government agency, or public utility notify the CDFW prior to beginning the activities listed above. The CDFW has 30 days to review the proposed actions and propose measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the project proponent becomes the Lake or Streambed Alteration Agreement. The conditions of agreement and a CWA Section 404 permit often overlap.

2.3 Regional and Local Regulatory and Planning Context

San Bernardino County Plant Protection and Management Code

Chapter 88.01 of the San Bernardino County Development Code provides regulatory and management guidance for plant resources within unincorporated areas of San Bernardino County, as well as within mixed public and private lands within the County. The goal is to promote both healthy plant community growth and the preservation of native species. In turn, the standardization of these practices helps with the conservation of natural waterways within the County and provide sustainable habitat for many local plant and wildlife species. This code primarily relates to tree and vegetation removal in public land and private land within unincorporated land within the County.

Desert Native Plant Protection

Chapter 88.01.060 of the San Bernardino County Development Code is a subset of the Plant Protection and Management Code that is focused on the conservation of specified desert plant species.

Mountain Forest and Valley Tree Conservation

Chapter 88.01.070 of the San Bernardino County Development Code is a subset of the Plant Protection and Management Code that is focused on the conservation of forest resources within the Mountain and Valley Regions of the County. It is meant to supplement Z'berg-Nejedly Forest Practice Act of 1973 (California Public Resources Code, Section 4526 et seq.). It regulates both the private and commercial harvesting of trees on public and private land within the County.

Riparian Plant Conservation

This code, Chapter 88.01.080 of the San Bernardino County Development Code, is a subset of the Plant Protection and Management Code that is focused on promoting the health of riparian corridors in relation to their impact on waterways within the region, their use as habitat by various plant and wildlife species, and their stabilization of stream banks.

San Bernardino County Soil and Water Conservation Code

This code, Chapter 88.02 of the San Bernardino County Development Code, provides regulatory framework to promote the health of soil communities within the County, limit soil erosion potential, and preserve air quality. This code primarily regulates ground-disturbing activities within the County.

SANBAG Countywide Habitat Preservation/Conservation Framework

As part of the Environment Element of Countywide Vision, Dudek completed a Countywide Habitat Preservation/Conservation Framework Study (Phase 1) for the San Bernardino Associated Governments (SANBAG; 2015). The Phase 1 Framework Study is a guidance document that outlines conservation issues and concerns, inventories existing conservation, identifies conservation opportunities, and itemizes data gaps associated with habitat conservation in San Bernardino County. The report identified conservation planning subareas, overarching principles, and recommendations to further develop a comprehensive approach to habitat preservation/conservation across the incorporated cities, unincorporated County lands, and public lands.

Draft Renewable Energy and Conservation Element

The County of San Bernardino's General Plan Draft Renewable Energy and Conservation Element has several policies that would result in consideration for biological resources during the planning of renewable energy development, including during the decommissioning process; these include the following:

- Policy 4.1: Apply standards to the design, siting, and operation of renewable energy facilities that protect the environment, including sensitive biological resources.
- Policy 4.4: Require renewable energy generation facility developers to provide and implement a decommissioning plan that provides for reclamation of the site to a condition at least as good as that which existed before the lands were disturbed or another appropriate end use that is stable (i.e., with interim vegetative cover), prevents nuisance, and is readily adaptable for alternative land uses.
- Policy 4.6: Renewable energy project site selection and site design shall be guided by the following priorities relative to habitat conservation and mitigation:
 - Avoid sensitive habitat, when feasible, through site selection and project design.
 - Where necessary and feasible, conduct mitigation on-site.
 - When on-site mitigation is not possible or adequate, conduct mitigation off-site in an area designated for conservation.
- Policy 4.8: Encourage renewable energy facility developers to design projects in ways that provide sanctuary (i.e., a safe place to nest, breed and/or feed) for native bees, butterflies and birds.
- Policy 5.1: Encourage the siting of renewable energy generation facilities on disturbed or degraded sites in proximity to necessary transmission infrastructure.

Siting policies addressed in the Development Code include the following:

- Impact on the natural environment: Siting that may negatively impact critical habitats and species that are threatened or endangered will be given very careful scrutiny. Generally, renewable energy and all other types of development will be expected to minimize and mitigate negative environmental impacts.
- Relationship to surrounding land uses: renewable energy development should not substantially conflict with surrounding land uses.

Designated Open Space

The County Board of Supervisors governs an area called County Service Area 120 (CSA 120). It was designated as open space in July 2009 but currently is not entirely preserved. This area provides for the management, operation, and protection of open space and mitigation property in the foothills north of the City of Rancho Cucamonga and the City of Fontana.

Local Habitat Conservation Plans

Several HCPs have been completed or are being planned in San Bernardino County (see Figure 2 for geographic extent). Some of these are limited to municipal limits or federal lands and do not overlap County jurisdiction. These HCPs may limit development or pose additional requirements or analysis when completing a project that overlaps an HCP area. A site-specific analysis would determine the full requirements.

West Mojave Plan. The West Mojave Plan, which covers the western portion of San Bernardino County in the Desert Region, was originally envisioned as an MSHCP and a land use plan amendment for BLM-administered lands. The HCP component of the plan was not approved as part of this planning effort, but the West Mojave Plan does serve as a land use plan amendment under the CDCA Plan for BLM lands (see Federal Land Policy and Management Act in Section 2.1, Federal Regulatory and Planning Context).

North Fontana Interim MSHCP Policy. This planning effort was initiated in 2004 and concentrates on the northern portion of the City of Fontana, adjacent to the foothills of the San Gabriel Mountains. The plan anticipates build-out of development into the remaining natural areas in north Fontana, and addresses the listed and sensitive species found in these areas. This HCP is not formally recognized by the USFWS.

City of Colton’s West Valley HCP. In 2015 the USFWS issued a 30-year incidental take permit to the City of Colton for the West Valley HCP, which covers impacts to Delhi sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) for proposed projects north of Interstate 10 (I-10) over approximately 416 acres. As part of the incidental take permit, the City is responsible for enforcing a fee-based ordinance to finance the protection, restoration, and management of 50.3 acres.

Town of Apple Valley MSHCP. An ongoing planning effort is underway to develop an MSHCP for the Town of Apple Valley (Town) and the Town’s sphere of influence. The website for this effort (<http://www.applevalley.org/services/planning-division/multi-species-habitat-conservation-plan>) provides a map (dated 2010) of the plan area that includes the Town’s limits, the sphere of influence limits, and a sphere of influence “planning extension” that would include County jurisdiction. Currently, no information is provided on covered activities or projects, or on what species may be covered for take (harm). If County jurisdiction is ultimately included in the plan area, a specific analysis would be required to determine whether there are limitations or restrictions on land use, or any other constraints or requirements that may be necessary.

Upper Santa Ana River HCP. The Upper Santa Ana River HCP is a collaborative effort among the water resource agencies of the Santa Ana River Watershed, in partnership with USFWS, CDFW, and several other government agencies and stakeholder organizations. The purpose of the Upper Santa Ana River HCP is to enable the water resource agencies to continue to provide and maintain a secure source of water for the residents and businesses in the watershed, and to conserve and maintain natural rivers and streams that provide habitat for a diversity of unique and rare species in the watershed. The covered projects span the majority of the Valley Region of San Bernardino County as well as the eastern portion of San Bernardino National Forest. The goal is to ensure the conservation of the covered species, particularly the Santa Ana sucker (*Catostomus santaanae*), while still allowing for increased water conservation through new infrastructure for infiltration and increased effluent recycling. This effort was initialized in late 2013 and is expected to be completed in 2017.

Upper Santa Ana River Wash HCP. This plan will cover primarily expanded gravel mining in an area downstream of the Seven Oaks Dam, in the southern extent of the City of Highland and the northern extent of the City of Redlands. The covered species include California gnatcatcher (*Poliophtila californica*), San Bernardino kangaroo rat (*Dipodomys merriami parvus*), Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*), and slender-horned spineflower (*Dodecahema leptoceras*). It is expected to be fully approved in 2016.

DRECP. The Draft DRECP was originally developed as an HCP/NCCP and a BLM Land Use Plan Amendment covering both public and private lands across seven counties, including the entire Desert Region of San Bernardino County. In October 2015, the DRECP BLM Land Use Plan Amendment and Final Environmental Impact Statement, which addresses renewable energy, land use, and conservation on BLM lands only, was released (BLM 2015). The DRECP does not provide HCP/NCCP coverage for private lands in San Bernardino County.

Lower Colorado River Multi-Species Conservation Program. This program was created to balance the use of Colorado River water resources with the conservation of native species and their habitats. The program works toward the recovery of species currently listed under the ESA. It also reduces the likelihood of additional species listings. Implemented over a 50-year period, the program accommodates current water diversions and power production and will optimize opportunities for future water and power development by providing ESA compliance through the implementation of an HCP. The program area extends over the main stem and historic 100-year floodplain of the Lower Colorado River within San Bernardino County, and includes Lake Havasu.

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3 METHODOLOGY

This biological resources existing conditions document was developed to characterize, at a landscape scale, the existing conditions of biological resources in San Bernardino County to support development of the Countywide Plan. This assessment used the best available information and data to develop a vegetation communities and land cover map, identify special-status species occurring in the County, compile an inventory of conserved and protected lands, and provide general information regarding climate, geology and soils, topography, and hydrology within each region of the County.

3.1 Vegetation Communities and Land Covers

San Bernardino County supports a variety of natural vegetation communities that support specific biological resources that may not be found in other vegetation communities. A vegetation community and land cover geodatabase has been created using the best available existing data.

Dudek's mapping effort (mapping) was conducted in four phases: (1) data and literature review, (2) GIS database development, (3) aerial photograph review, and (4) data interpretation and analysis.

3.1.1 Data and Literature Review

Dudek conducted an extensive data and literature review of available vegetation community mapping resources throughout San Bernardino County. Dudek reviewed available relevant data on vegetation communities and land covers to determine those resources that were applicable and of appropriate quality for use during the current mapping effort. A summary of the previous mapping efforts and the vegetation community/land cover classification system is provided in this subsection.

Dudek identified the following key sources of existing vegetation community and land cover data for each region of the County:

- Desert Region
 - *National Vegetation Classification Standard (NVCS)-Based Mapping from the Mojave Desert Ecosystem Project* (CDFG 2012a)¹

¹ The California Department of Fish and Game (CDFG) has been officially renamed the California Department of Fish and Wildlife (CDFW) as of January 1, 2013. Where references in this document are made to the department for background information, documents, permits, consultations, etc. (guidance) prior to January 1, 2013, the title CDFG is used and for references to guidance after January 1, 2013, CDFW is used.

- Mountain and Valley Region
 - *Classification and Assessment with Landsat of Visible Ecological Groupings* (CALVEG) (USFS 2014)
 - SANBAG existing land-use layer (SANBAG 2011)

These previous mapping efforts were conducted at different scales, covered different areas of San Bernardino County, and used different classification standards. Table 1 summarizes the previous mapping efforts that were used as a baseline for this analysis. Brief descriptions of each mapping effort are provided below.

Table 1
Previous Vegetation Community and Land Cover Mapping Efforts

Mapping Effort	Classification System Used	Region
CALVEG (USFS 2014)	CALVEG: A Classification of California Vegetation (USFS 1981); crosswalks to NVCS (Grossman et al. 1998)	Mountain and Valley Regions (CALVEG Zone 7 in USFS Region 5)
SANBAG Existing Land-Use Layer (SANBAG 2011)	N/A	Mountain and Valley Regions
NVCS-based mapping from the Mojave Desert Ecosystem Project (CDFG 2012a)	NVCS (Grossman et al. 1998)	Desert Region

CALVEG

The USFS Region 5 Ecology Group initiated CALVEG in 1978 as a means to group existing vegetation stands (versus potential natural vegetation) using a statewide standard classification and naming convention. The standards and procedures were established at the national and regional levels. Originally, color-infrared satellite imagery and field verification were used to identify “formation” categories (forest, woodland, chaparral, shrubs and herbaceous, and non-vegetated units) based on distinctions calculated among canopy reflectance values used in the LANDSAT satellite. The CALVEG classification system conforms to the upper levels of the NVCS hierarchy.

NVCS-Based Mapping from the Mojave Desert Ecosystem Project

The Desert Region was mapped using the 2013 DRECP land cover map. This mapping effort, conducted in 2011 and 2012 for large portions of the Mojave and Colorado/Sonoran Deserts within San Bernardino County, used multiple sources by combining both fine-scale alliance-level and medium-scale group-level mapping using the NVCS hierarchical classification system from the

Mojave Desert Ecosystem Project (CDFG 2012a). This classification system describes vegetation at three levels: vegetation groups, vegetation types (NVCS Group level), and alliances (NVCS Alliance level). Vegetation was mapped at the fine-grained alliance level or it was mapped at the broader and more general group level.

3.1.2 Vegetation Community and Land Cover Classification System

In September 2010, the California Department of Fish and Game (CDFG) published *the List of Vegetation Alliances and Associations: Natural Communities List Arranged Alphabetically by Life Form* (Natural Communities List; CDFG 2010) based on the *Manual of California Vegetation*, Second Edition (Sawyer et al. 2009), which is the California expression of the National Vegetation Classification System developed by The Nature Conservancy (Grossman et al. 1998). These classification systems focus on a quantified, hierarchical approach that includes both floristic (plant species) and physiognomic (community structure and form) factors as currently observed (as opposed to predicting climax or successional stages). The system was designed to apply an updated uniform hierarchical structure to the state’s vegetation types that again followed quantifiable classification rules in alliance and association groups.

In the Natural Communities List (CDFG 2010), physiognomy is described in the upper levels of the classification hierarchy, whereas floristics are described by the lowest two levels.² The floristic levels are alliances and associations, and the upper levels are described as formations and divisions. Table 2 provides an example of the hierarchy used in the Natural Communities List, including the community hierarchy in parentheses.

Table 2
Example Hierarchy of the Natural Communities List

1. Forests and Woodlands (<i>Formation Class</i>)
1.C. Temperate Forest (<i>Formation Subclass</i>)
1.C.1. Warm Temperate Forest (<i>Formation</i>)
C.1.c. Madrean Forest and Woodland (<i>Division</i>)
MG009. California Forest and Woodlands (<i>Macrogroup</i>)
California Walnut Groves (<i>Alliance</i>)
California Walnut/annual herbaceous (<i>Association</i>)

Source: CDFG 2010.

² Physiognomic classifications are based on the physiognomy (i.e., the set of functional and morphological attributes) of the dominant plants in the community. Floristic classifications take, as the basis for defining community types, the taxonomic identity of the plants in the community (Sawyer et al. 2009).

An alliance represents a level of uniformity in plant structure and dominant species in the uppermost layer. The alliance is a representation of broad-scale environmental differences that result in distinguishable vegetation communities in terms of overall structure and dominant species. Associations take into account more detailed floristic patterns, including species that co-occur with the dominant of the uppermost layer. As such, associations “reflect more localized differences related to microclimate and soil” (Sawyer and Keeler-Wolf 1995).

The natural communities within the Desert Region were mapped to NVCS and, when feasible, vegetation was mapped at the fine-grained alliance level; if this was not possible, it was mapped at the broader and more general group level. The Mountain and Valley Regions were mapped to the upper levels of the NVCS system. The natural communities and land covers were then cross-walked to general community categories, which follow the CDFG 2003 hierarchy; however, some modifications to this were made based on the County of San Bernardino sensitive communities.

3.1.3 GIS Database Development

Project-specific GIS project files (mxd format) were created using ArcGIS software. Dudek GIS specialists incorporated the existing, available vegetation community and land cover data including the digital, vector-based boundaries of vegetation communities and land covers from the previous mapping efforts (CDFG 2012a; SANBAG 2011; USFS 2014). These were then compiled into a program-specific GIS layer for each region.

The Desert Region vegetation and community land cover mapping GIS project file only included the mapping of a small portion (approximately 353 acres), because these were not originally mapped (CDFG 2012a); therefore, these areas were mapped in the office using aerial photograph review. The remainder of the Desert Region vegetation and community land cover map was left as is from the DRECP data and no additional review or edits were made to this.

3.1.4 Aerial Photograph Review

Aerial photograph review included a review of current aerial photographs to make preliminary determinations on vegetation communities and land covers in non-urban areas. Areas were reviewed in the office using GIS software in ArcGIS. The Mountain and Valley Regions were divided into 75 grid cells (each covering an area of approximately 3.5 by 7 miles), each of which was assigned to a Dudek biologist to map. Vegetation communities and land cover types were reviewed and changes or edits were digitized and annotated by Dudek biologists using ArcGIS tools. Biologists were able to map vegetation communities and land covers to the appropriate habitat classification. Minimum mapping units were used to standardize the mapping protocol among biologists and establish an appropriate scale for the mapping effort. A minimum mapping

unit of 1 acre was established for wetlands and washes, modified or unvegetated lands (such as agriculture or urban development) were mapped at 2.5-acre mapping units, and a 10-acre mapping unit was established for all other vegetation communities.

Biologists focused on updating/correcting the previous mapping efforts within the data sets. Priority areas included valley and foothill areas within the vicinity of major drainages, including Santa Ana River, Mill Creek, Plunge Creek, City Creek, Cajon Creek, Lytle Creek, Etiwanda fan, etc.; riparian corridors; urban/natural interface; and land use categories. During the aerial interpretation review, if errors and discrepancies with current conditions warranted edits to these older data sets, obvious errors and/or omissions (e.g., urban land uses mapped as natural vegetation communities) were corrected and were mapped to the CALVEG system.

3.1.5 Data Interpretation and Analysis

Once the aerial interpretation was complete, the boundaries of the vegetation communities and land uses were converted into geo-referenced polyline features within ArcGIS. Dudek GIS specialists confirmed the accuracy of the vegetation communities and converted the polylines into polygons and performed a spatial join to link the vegetation polygons with the vegetation code attribution. All map grids were then combined into one GIS layer.

An in-depth GIS analysis was performed on the dataset for quality assurance/quality control. Duplicate and overlapping polygons were corrected. Vegetation community and land cover attributions were rechecked and corrected, as appropriate. The analysis also included the removal of vegetation communities outside the project boundary, verifying name and code attributions, and merging adjacent polygons with the same attribution between grid sheets, and confirming the crosswalk between regions to ensure consistency.

3.1.6 Sensitive Communities

In September 2010, CDFG published the Natural Communities List (CDFG 2010), which uses the scientific name of the dominant species in that alliance as the alliance name and includes a global and state rarity rank based on the NatureServe Standard Heritage Program methodology (NatureServe 2015). The conservation status of a vegetation community is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment (G = global, N = national, and S = subnational). The numbers have the following meaning:

- 1 = critically imperiled
- 2 = imperiled
- 3 = vulnerable to extirpation or extinction

4 = apparently secure

5 = demonstrably widespread, abundant, and secure (NatureServe 2015)

For example, G1 would indicate that a vegetation community is critically imperiled across its entire range (i.e., globally). A rank of S3 would indicate the vegetation community is vulnerable and at moderate risk within a particular state or province, although it may be more secure elsewhere (NatureServe 2015). Because NatureServe ranks vegetation communities at the global level, it has few rankings at the state or province level available. However, the Natural Communities List (CDFG 2010) includes state-level rarity rankings (i.e., the subnational (S) rank) for vegetation communities. This list (CDFG 2010) is considered the authority for ranking the conservation status of vegetation communities in California.

CDFG's guidelines for determining high priority vegetation types includes considering any communities listed with a ranking of S1–S3 and ascertaining whether the specific stands of the community type within the project area are “considered as high-quality occurrences of a given community.” The consideration of stand quality includes cover of non-native invasive species, human-caused disturbance, reproductive viability, and insect or disease damage (CDFG 2012b).

Vegetation communities considered special-status are those with an “S” ranking of 1, 2, or 3 (CDFG 2010). In addition, special-status vegetation communities also include those with protection under the existing Development Code.

3.2 Habitat Linkages and Wildlife Corridors

Habitat linkages are landscape-scale open space areas that provide a natural habitat connection between at least two larger adjacent open spaces or habitat areas. Habitat linkages provide a large enough area to support, at a minimum, a natural habitat mosaic and viable populations of smaller terrestrial species and allow for gene flow through diffusion of populations over a period of generations. Habitat linkages also allow for jump dispersal for some species between neighboring habitats. Habitat linkages may be large tracts of natural open space that serve as resident species habitat or habitat linkages may serve primarily as landscape connections (i.e., for dispersal movements or travel). This report relies largely on existing sources for presenting potential habitat linkages and wildlife corridors in San Bernardino County, including the sources in the following paragraphs.

California Department of Transportation and CDFG

California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California (Spencer et al. 2010). For San Bernardino County (portions of the South Coast and Mojave ecoregions), this effort identifies at a broad scale, large, relatively natural habitat blocks

that support native biodiversity (Natural Landscape Blocks) and areas essential for ecological connectivity between them (Essential Connectivity Areas). The California Desert Connectivity Project discussed below is a newer, more regionally focused effort and replaces the areas where it overlaps with the California Essential Habitat Connectivity Project.

South Coast Wildlands

South Coast Wildlands is a non-profit organization working to maintain and restore essential wildlife corridors connecting wildlands throughout California. South Coast Wildlands has studied and modeled wildlife movement in several areas within San Bernardino County with four major efforts: South Coast Missing Linkages Project, Joshua Tree–Twentynine Palms Connection, California Desert Connectivity Project, and California Essential Habitat Connectivity.

South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion (South Coast Wildlands 2008). The South Coast Missing Linkages Project provides a network of essential linkages and corridors within the region that are the core to conservation strategies for Southern California (South Coast Wildlands 2008). This is a collaborative interagency project with the focus being to conserve the highest priority linkages within San Bernardino County and the rest of Southern California.

A Linkage Design for the Joshua Tree–Twentynine Palms Connection. South Coast Wildlands, Fair Oaks, California (Penrod et al. 2008). The linkage design for the Joshua Tree–Twentynine Palms Connection was part of the South Coast Missing Linkages discussed above but with a focus for a specific geographic area. Penrod et al. (2008) conducted various landscape analyses to identify those areas necessary to accommodate continued movement of selected focal species through this landscape. Their collaborative and interdisciplinary approach included selecting focal species, a landscape permeability analysis, a patch size and configuration analysis, field investigations to ground-truth results and identify barriers, and an overall linkage design.

A Linkage Network for the California Deserts (Penrod et al. 2012). The primary objective is to identify lands essential to maintain or restore functional connectivity among wildlands for all species or ecological processes of interest in the California deserts. Their collaborative and interdisciplinary approach included selecting focal species, defining 22 analysis areas (one for each pair of landscape blocks to be connected), least-cost modeling to identify habitat that support multiple species potentially using each linkage, analyzing connectivity in a changing climate, a patch size and configuration analysis, field investigations to ground-truth results and identify barriers, and an overall linkage design.

Herpetological Conservation and Biology

Conserving Population Linkages for the Desert Tortoise (*Gopherus agassizii*) (Averill-Murray et al. 2013). Averill-Murray et al. (2013) modeled linkages between tortoise conservation areas using least-cost corridors based on an underlying model of suitable tortoise habitat to determine a minimum linkage network for desert tortoise.

Google Earth

Riparian and Wash Corridors. A review of aerial photography (Google Earth 2014) revealed that some of the major creeks and washes had not been captured during the linkage efforts discussed. Therefore, these major creeks and washes were added to the GIS file as polylines to represent the center of the drainage.

San Bernardino County

San Bernardino County Open Space Overlay Map. San Bernardino County Land Use Services Department Advance Planning Division maintains an open space overlay map that illustrates three types of open space areas: wildlife corridors, buffer zones, and major open space policy areas. The open space overlay map descriptions were used in this biological report, with information added based on the literature review and local knowledge.

3.3 Protected and Wilderness Areas

Areas with existing protection include lands that have been legislatively designated as protected lands and are administered by federal or state mandates, including national forests, national parks, national preserves, BLM wilderness, and CDFW ecological reserves. Additionally, areas with existing protection include lands held by local entities, land trusts, and lands with conservation easements or other legal mechanism providing resource protection. The SANBAG Countywide Habitat Preservation/Conservation Framework included an effort to solicit, gather, and map protected areas within San Bernardino County, and it is that working layer that is used for this report.

3.4 Special-Status Species

Special-status species are defined as follows:

- Species classified as endangered or threatened by USFWS under the ESA (“federally listed”)
- Species classified as endangered, threatened, or rare by CDFW under CESA (“state listed”)
- Candidates for future listing under the ESA

- Plant species designated by CNPS as “rare, threatened, or endangered in California” (CRPR 1B and 2B)
- Wildlife species designated as a species of special concern by CDFW
- Wildlife species fully protected under California Fish and Game Code Sections 3511, 4700, 5050, and 5515
- Species that are considered a locally significant species; that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context, such as within a county or region, or is so designated in local or regional plans, policies, or ordinances

Special-status species data were compiled from the following sources: the California Natural Diversity Database (CDFW 2015), the CNPS Inventory of Rare and Endangered Plants (CNPS 2015), the USFS database (USFS 2015), the USFWS Carlsbad office species occurrence database (USFWS 2015a), and the species inventory from the County of San Bernardino Department of Public Works, which includes results from their biological surveys through July 2015. The California Natural Diversity Database and CNPS queries were run using data accumulated through August 2015, whereas the USFS and USFWS queries were run using data accumulated through December 2015. In addition to species occurrence data, range overlaps with San Bernardino County were reviewed. For plant species, the CNPS Inventory of Rare and Endangered Plants includes a database of U.S. Geological Survey 7.5-minute quadrangles from which the species have been reported, which can be used as a surrogate for the species range (CNPS 2015). For wildlife species ranges, a number of species-specific resources were used, including the California Wildlife Habitat Relationships data (Zeiner et al 1990; CDFW 2016), California herpetology data (Nafis 2015–2016), and California Bird Species of Special Concern (Shuford and Gardali 2008). Wildlife species accounts from the HCPs that occur in San Bernardino County (see Section 2.3, Regional and Local Regulatory and Planning Context) were also used to determine current range and other species-specific parameters.

San Bernardino County Biotic Resources Overlay Map

San Bernardino County Land Use Services Department Planning Division maintains a biotic resources overlay map that illustrates the best available information on biological resources from federal, state, and local agencies. The biotic resources overlay map is based on existing sources including California Natural Diversity Database records, USFS species and habitats of concern, USFWS critical habitat, San Bernardino County Museum biological species database, BLM data on Mohave ground squirrel (*Spermophilus (Xerospermophilus) mohavensis*) range, and desert tortoise population density. This biological resources report conducted a review of these and other sources for more up-to-date information; therefore, the County biotic resources overlay was not used further.

Data Limitations

The species occurrence data and USFWS-designated critical habitat have inherent limitations. For example, occurrence data are from sources collected at different times, spatial scales, and for different purposes, which can result in an unsystematic and spatially biased occurrence data set. Sampling effort is, for example, far greater in the western portion of the County and near population centers or along roadways as opposed to the eastern and more remote locations of the County. Additionally, species occurrence records only report positive detections and a lack of records does not mean the species is absent.

With regard to USFWS-designated critical habitat, this data is only available for federally listed species for which critical habitat has been designated; therefore, this dataset would not address state-listed species or other special-status species. Designated critical habitat represents areas critical to the conservation of the species, and should not be used to represent the distribution or range known to support the species.

4 EXISTING CONDITIONS—DESERT REGION

4.1 Desert Region – Executive Summary

Approximately 12% of the Desert Region is under County jurisdiction, with the remainder under either tribal jurisdiction, local (City) jurisdiction, or federal jurisdiction, including BLM, National Park Service (NPS), and Department of Defense.

The Desert Region is bounded to the south primarily by the San Bernardino and San Gabriel Mountain Ranges. The foothills on the northern side level off quickly, with the southern part of the desert lying primarily flat with elevations hovering around 1,000 feet above mean sea level (amsl) and scattered low-elevation mountains ranging between 2,000 and 4,000 feet amsl. The Desert Region is composed of mountains, alluvial fans, playas, basin, plateaus, and dunes. Many of these features (alluvial fans, basins, playas, and slope debris in the form of rockslides and rockfalls) result from the erosive power of running water; however, significant surface flow is both unpredictable and scarce in the arid desert environment. These geomorphic features often provide unique habitat value. Sand dunes can be found in various portions of the Desert Region. This soil type is composed of fine-grained particles loosely stacked and oftentimes blown by wind. Wind-blown sands are critical for the Mohave fringe-toed lizard (*Uma scoparia*), which typically burrows beneath the fine sand, and support several endemic invertebrate species. The desert also supports carbonate soils characterized by a crust layer of calcium carbonate that can be difficult to penetrate and that due to their chemical makeup can create a stressful environment for plants. These soils provide suitable habitat for many rare and endemic plant species. Sand dunes and carbonate soils should be managed to maintain their resource value.

Other areas of high priority for management and conservation would be riparian and wetland communities. In the desert, riparian communities would include desert dry wash woodland and playas. Additionally, the desert supports alluvial fan sage scrub; approximately 41% of this community in the desert is under County jurisdiction, providing opportunity for management to maintain its high resource value. Finally, wind-blown sands and associated sand dune vegetation are some of the most biologically unique habitats in the Desert Region, which should be protected where they occur (including sand sources).

Within the Desert Region, USFWS has designated critical habitat for the following federally listed threatened or endangered plant and animal species: Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*), Cushenbury milk-vetch (*Astragalus albens*), Cushenbury oxytheca (*Acanthoscyphus parishii* var. *goodmaniana*), Lane mountain milkvetch (*Astragalus jaegerianus*), Parish's daisy (*Erigeron parishii*), arroyo toad (*Anaxyrus californicus*), desert tortoise, southwestern willow flycatcher (*Empidonax traillii extimus*), western yellow-billed

cuckoo (*Coccyzus americanus occidentalis*), bonytail chub (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*). Critical habitat should be conserved where primary constituent elements are present that are critical to the survival of the species. If a project has a federal nexus, consultation with the USFWS is required prior to impacting critical habitat.

The Desert Region supports a number of special-status species. Development areas should be reviewed for the potential to support a special-status species, and impacts to special-status species should be avoided and minimized to the maximum extent practicable. A total of 176 special-status plant species have been documented in the Desert Region, including 8 species that are federally and/or state listed as endangered or threatened. A total of 58 special-status animal species have been documented, including 16 species that are federally or state listed as endangered or threatened, and 8 that are state fully protected. State and federally listed species and fully protected species are listed in Table 3.

The Mojave River is perhaps the most prominent feature in the Desert Region and supports extensive riparian, wetland, and wind-blown sands habitat. It is also known to currently support many special-status species, including southwestern willow flycatcher, least Bell's vireo, arroyo toad, Mojave river vole, Mohave fringe-toed lizard, summer tanager, yellow warbler, yellow-breasted chat, and western pond turtle. It is also an important wildlife linkage. The Mojave River is threatened due to development encroachment and a lowering water table and should be a high priority for conservation.

Table 3
Listed Species in the Desert Region

Common Name	Scientific Name	Federal Status	State Status
<i>Wildlife</i>			
California red-legged frog	<i>Rana draytonii</i>	FT	SSC
arroyo toad	<i>Anaxyrus californicus</i>	FE	SSC
desert tortoise	<i>Gopherus agassizii</i>	FT	ST
least Bell's vireo (nesting)	<i>Vireo bellii pusillus</i> (nesting)	FE	SE
southwestern willow flycatcher (nesting)	<i>Empidonax traillii extimus</i> (nesting)	FE	SE
western yellow-billed cuckoo (nesting)	<i>Coccyzus americanus occidentalis</i> (nesting)	FT	SE
western snowy plover (nesting)	<i>Charadrius alexandrinus nivosus</i>	FT	SSC
bonytail	<i>Gila elegans</i>	FE	SE
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	FE	SE, FP
Mohave tui chub	<i>Siphateles bicolor mohavensis</i>	FE	SE, FP
razorback sucker	<i>Xyrauchen texanus</i>	FE	SE, FP
California black rail	<i>Laterallus jamaicensis coturniculus</i>	None	ST, FP
Swainson's hawk (nesting)	<i>Buteo swainsoni</i>	None	ST

Table 3
Listed Species in the Desert Region

Common Name	Scientific Name	Federal Status	State Status
bald eagle	<i>Haliaeetus leucocephalus</i> (nesting & wintering)	FDL	SE, FP
Arizona Bell's vireo	<i>Vireo bellii arizonae</i> (nesting)	None	SE
elf owl	<i>Micrathene whitneyi</i> (nesting)	None	SE
Gila woodpecker	<i>Melanerpes uropygialis</i>	None	SE
gilded flicker	<i>Colaptes chrysoides</i>	None	SE
tricolored blackbird	<i>Agelaius tricolor</i> (nesting colony)	None	ST
golden eagle	<i>Aquila chrysaetos</i> (nesting and wintering)	None	FP
White-tailed kite	<i>Elanus leucurus</i> (nesting)	None	FP
Mohave ground squirrel	<i>Spermophilus (Xerospermophilus) mohavensis</i>	None	ST
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	None	SC, SSC
Nelson's bighorn sheep	<i>Ovis canadensis nelson</i>	None	FP
<i>Plants</i>			
Cushenbury buckwheat	<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	FE	None
Cushenbury milk-vetch	<i>Astragalus albens</i>	FE	None
Cushenbury oxytheca	<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i>	FE	None
Lane Mountain milk-vetch	<i>Astragalus jaegerianus</i>	FE	None
Parish's daisy	<i>Erigeron parishii</i>	FT	None
triple-ribbed milk-vetch	<i>Astragalus tricarlinatus</i>	FE	None
Mojave tarplant	<i>Deinandra mohavensis</i>	None	SE
Thorne's buckwheat	<i>Eriogonum thornei</i>	None	SE

Notes:

FDL: federally delisted
FE: federally listed as endangered
FT: federally listed as threatened
FP: fully protected
SE: state listed as endangered
ST: state listed as threatened
SC: state candidate for listing
SSC: state species of special concern

4.2 Physical Conditions

Physical conditions across the landscape play important roles in the distribution of biological resources. The following provides an overview of some key physical characteristics within the Desert Region of San Bernardino County, depicted on Figure 3, Geomorphic Features – Desert Region.

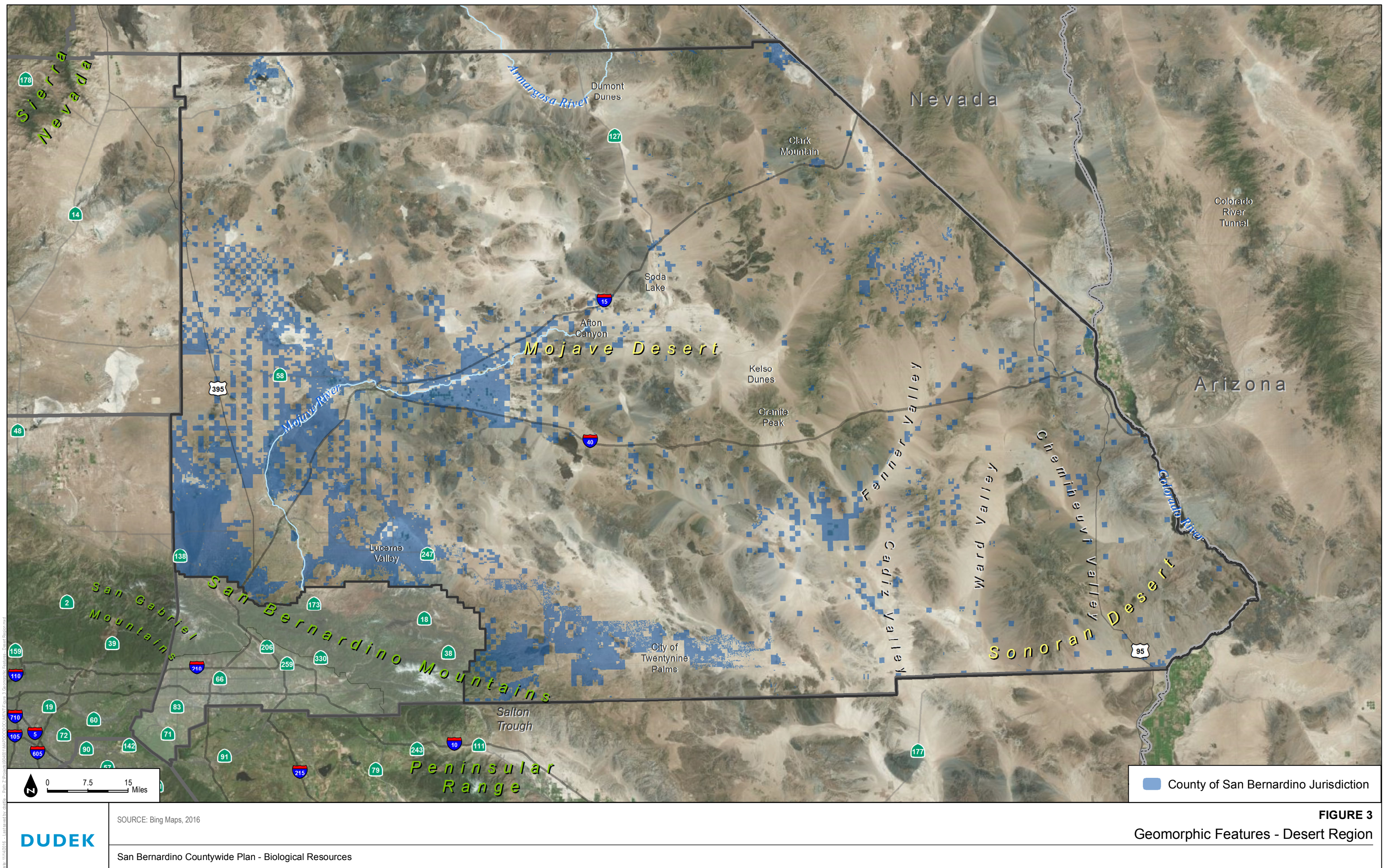
4.2.1 Climate

The Desert Region of San Bernardino County is polarizing in its climate; it has hot, dry summers accompanied by mild to cold winters. Rain events, while typically spread out in frequency, are

derived from winter frontal storms coming off the Pacific Ocean and intermittent summer convective monsoons. The Mojave Desert is situated northwest of the Sonoran Desert and is bounded on the west by the Sierra Nevada, as well as by the San Bernardino, Tehachapi, and San Gabriel Mountain Ranges. The Sonoran Desert is bounded on the west by the Peninsular Ranges and on the east by the Colorado River. A result of these large mountain ranges is the creation of a “rain-shadow” effect that creates the arid desert climate. Discussed below are three distinct ecoregions within the Desert Region with different climate types.

Mojave Desert

The Mojave Desert covers a large portion of San Bernardino County in the central, northern and eastern portions of the County. Unlike the Sonoran Desert, which experiences two distinct wet seasons, the Mojave Desert traditionally experiences most of its rain during the winter months (Redmond 2009). The valleys within the Mojave Desert typically sees from 2 to 5 inches of annual rain and the mountains typically get between 10 to 30 inches of annual rain (Webb et al. 2009). The Mojave Desert sees some monsoonal rainfall as well, with an average of 1.5 inches annually (TNC 2010). Wet years and periods of drought typically follow the El Niño Southern Oscillation cycle. This cycle includes a variation from predicted sea surface temperatures that results in increased winter precipitation in southern and central California (NOAA 2016).



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Sonoran Desert

The portion of the Sonoran Desert within California is also sometimes referred to as the Colorado Desert and has a lower average elevation than the Mojave Desert, as a result it is hotter and drier than the Mojave Desert. The majority of the Sonoran Desert is lower than 1,000 feet above mean sea level (amsl), the lowest elevation being 275 feet below mean sea level at the Salton Trough (CDFG 2007, Chapter 8). The mountains of the Sonoran Desert are shorter than that of the Mojave Desert, seldom exceeding 3,000 feet amsl (CDFG 2007). As a result of these lower elevations, the Sonoran Desert experiences some snow at the higher elevations during cold winter storms, but rarely has sub-freezing temperatures and frost. There are two distinct wet seasons in this portion of the Desert Region: annual winter rains and North American monsoons during the end of summer and beginning of fall (from July to late September (NOAA 2004)). The temperature and precipitation patterns are typically more consistent in the Sonoran Desert in comparison with the Mojave Desert. July is usually the hottest month, with an average high of 107°F and an average low of 75°F. December and January are typically the coldest months, with an average high of 68°F and an average low of 38°F.

Foothills

The foothills encompass the northern edges of the San Gabriel, San Bernardino, and Western Transverse Mountain Ranges and are generally composed of chaparral vegetation. The foothills have relatively cool winters and warm summers with winter temperatures ranging from 58°F to 34°F and summer temperatures ranging from 96°F to 67°F. A typical annual precipitation for these areas is about 10 inches of rain and 0.8 inch of snow (WRCC 2011).

4.2.2 Soils

The Desert Region is predominantly composed of sandy gravel (USDA 2015). This soil type is characterized by high runoff coefficients and fast percolation. Additionally, various mountain ranges have exposed bedrock and mineral deposits in granite rock. Distinctive landforms found in the Mojave Desert include sand dunes, desert pavement, and dry alkaline lake beds (or playas). Unique landforms and soil attributes that support special-status biological resources have been outlined below.

Sand Dunes

Sand dunes can be found in various portions of the Desert Region of San Bernardino County. Three of the largest dunes include the Kelso Dunes (located approximately 12 miles southeast of Baker), Dumont Dunes (located approximately 31 open miles north of Baker), and Cadiz Dunes

(located approximately 40 miles east of Twentynine Palms). This soil type is composed of fine-grained particles loosely stacked and oftentimes blown by wind. Wind-blown sands are critical for the Mohave fringe-toed lizard, which typically burrows beneath the fine sand. Dune systems also support several endemic invertebrate species (Dudek and ICF 2011). For example, the Kelso Dunes support several endemic arthropod species, including Kelso Dune glaresis scarab beetle (*Glaresis arenata*), Kelso Jerusalem cricket (*Ammopelmatus kelsoensis*), and Kelso giant sand treader cricket (*Macrobaenetes kelsoensis*).

Carbonate Soils

Some desert soils contain a crust layer of calcium carbonate that can be difficult to penetrate and due to their chemical makeup can create a stressful environment for plants. Carbonate outcrops can be found throughout the mountains of the Mojave Desert, most notably the Twentynine Palms area and Mojave National Preserve. These soils provide suitable habitat for many rare and endemic plant species, such as the federally listed Cushenbury buckwheat, Cushenbury milk-vetch, Cushenbury oxytheca, and Parish's daisy (*Erigeron parishii*).

4.2.3 Topography and Geomorphology

The Desert Region is primarily characterized by shorter remote mountain ranges surrounded by desert plains. These mountains ranges often have alluvial fans associated with them; these are a fan-shaped buildup that is wrapped at the base of the front of mountains. These landforms originate from flashflood debris and stream sediment accretion (Harden 2004). When an alluvial fan becomes larger and the paths become more integrated, it is referred to as a bajada. Other significant landforms within the desert include mountains, plateaus, basins, playas, and dunes. The space between the mountainous areas is often characterized by playas and basins, which take the form of dry lakes.

The majority of the Desert Region ranges from 1,000 to 5,000 feet amsl, with some areas falling below 1,000 feet amsl within valleys and washes.

The Desert Region is bounded to the south primarily by the San Bernardino and San Gabriel Mountain Ranges. The foothills on the northern side level off quickly, with the southern part of the desert lying primarily flat with elevations hovering around 1,000 feet and scattered low-elevation mountains ranging between 2,000 and 4,000 feet.

Some of the flattest parts of the Desert Region include the Chemehuevi, Ward, and Fenner Valleys at the eastern part of the County next to the Colorado River, as well as the Chadiz Valley northeast of Twentynine Palms.

Some of the highest areas of the Desert Region include Granite Peak, which is west of Lucerne Valley and measures 6,130 feet amsl, while Clark Mountain in the Mojave National Preserve measures 7,929 feet amsl.

4.2.4 Hydrology

The Desert Region is composed of mountains, alluvial fans, playas, basin, plateaus, and dunes. Many of these features (alluvial fans, basins, playas, and slope debris in the form of rockslides and rockfalls) result from the erosive power of running water; however, significant surface flow is both unpredictable and scarce in the arid desert environment. Substantial surface water is typically ephemeral and usually the result of flash-flood events, particularly during the monsoon season in the Sonoran Desert. These events may result in stream channels taking the form of alluvial fans, discontinuous ephemeral channels, single-thread channels with floodplains, and compound (braided) channels (Lichvar and McColley 2008).

Anthropogenic modifications to hydrology from urbanization and water conveyance and storage also exist. The Mojave and Southern Mojave Watersheds are the primary geographic and hydraulic features within the Desert Region encompassing over 7 million acres. Major hydrologic features in the Desert Region include the Lower Colorado River, Mojave River, and Armargosa River.

Mojave River

The Mojave River is an intermittent river, with most of the water flow occurring underground. The river's source starts within the San Bernardino Mountains and terminates at Soda Lake approximately 110 miles to the northeast. Water in the Mojave River is mostly underground, but comes to the surface in areas with impermeable rock, such as the upper and lower narrows near Victorville and in the Afton Canyon area northeast of Barstow.

Lower Colorado River

The southern extent of the Colorado River, also known as the Lower Colorado River, runs through the Mojave Desert and forms the easternmost boundary of San Bernardino County as well as the boundary between California and Arizona. After passing through Hoover Dam in Nevada, the Colorado River runs southeast along the California border through the City of Needles, providing irrigation support to the surrounding agricultural communities. From Needles, it continues to Lake Havasu before passing into Riverside County to the south.

Armargosa River

The Armargosa River is an intermittent river that remains dry for the majority of the year. It originates from the Armargosa Valley in Nevada before entering the Mojave Desert. It passes through San Bernardino County from the northern Inyo County, running parallel to Highway 127 before looping around running northwest back into Inyo County and terminating in an underground aquifer in Death Valley.

4.3 Biological Conditions

The following subsections provide a detailed description of the special-status plant and wildlife species and vegetation communities that occur within the Desert Region of San Bernardino County.

4.3.1 Vegetation Communities and Land Covers

The following describes the vegetation communities and land covers that have been mapped in the Desert Region of San Bernardino County. Table 4 provides an overview of the vegetation communities and land covers located within the Desert Region and Figure 4, Vegetation Communities and Land Covers – Desert Region, depicts the geographic extent of the communities. As discussed in Section 3.1, Vegetation Communities and Land Covers, the DRECP land cover map uses the NVCS hierarchical classification system and describes vegetation at three levels: Vegetation Groups, Vegetation Types (NVCS Group level), and Alliances (NVCS Alliance level). Table 4 includes the vegetation group level and is organized by general community categories. For detailed descriptions of each vegetation community within the Desert Region, refer to Appendix A. The NVCS Alliance level descriptions were cross-walked with alliances from the Manual of California Vegetation (Sawyer et al. 2009). This listing and the associated sensitivity status of each alliance can be found in Appendix B.

Table 4.
Vegetation Communities and Other Land Covers within the Desert Region of San Bernardino County

	Acres within County Boundary	% within County Boundary	Acres Within County Jurisdiction	% within County Jurisdiction
<i>Agriculture</i>				
Agriculture	21,851.03	0.18%	21,438.04	0.18%
<i>Subtotal</i>	21,851.03	0.18%	21,438.04	0.18%
<i>Barren</i>				
Barren	57.16	0.00%	57.16	0.00%
<i>Subtotal</i>	57.16	0.00%	57.16	0.00%
<i>Chenopod Scrub</i>				
North American warm desert bedrock cliff and outcrop	3,766.56	0.03%	3,766.56	0.03%
Shadscale - saltbush cool semi-desert scrub	112,866.86	0.94%	112,220.32	0.96%
Southwestern North American salt basin and high marsh	136,621.96	1.14%	136,101.41	1.16%
<i>Subtotal</i>	253,255.37	2.12%	252,088.28	2.16%
<i>Coastal Scrub</i>				
Central and south coastal California seral scrub	818.58	0.01%	760.91	0.01%
Central and South Coastal Californian coastal sage scrub	26,412.85	0.22%	22,959.37	0.20%
<i>Subtotal</i>	27,231.43	0.23%	23,720.28	0.20%
<i>Desert Bedrock Cliff and Outcrop</i>				
North American warm desert bedrock cliff and outcrop	804,349.35	6.73%	801,240.26	6.86%
<i>Subtotal</i>	804,349.35	6.73%	801,240.26	6.86%
<i>Desert Dry Wash Woodland</i>				
Madrean Warm Semi-Desert Wash Woodland/Scrub	385,922.16	3.23%	381,837.43	3.27%
Mojavean semi-desert wash scrub	2,335.17	0.02%	2,335.17	0.02%
Sonoran-Coloradan semi-desert wash woodland/scrub	5,119.21	0.04%	4,891.18	0.04%
Southwestern North American riparian/wash scrub	1.16	0.00%	1.16	0.00%

Table 4.
Vegetation Communities and Other Land Covers within the Desert Region of San Bernardino County

	Acres within County Boundary	% within County Boundary	Acres Within County Jurisdiction	% within County Jurisdiction
<i>Subtotal</i>	393,377.69	3.29%	389,064.93	3.33%
<i>Desert Dunes</i>				
North American warm desert dunes and sand flats	114,524.97	0.96%	113,239.53	0.97%
<i>Subtotal</i>	114,524.97	0.96%	113,239.53	0.97%
<i>Desert Sink Scrub</i>				
Southwestern North American salt basin and high marsh	19,889.18	0.17%	19,873.02	0.17%
<i>Subtotal</i>	19,889.18	0.17%	19,873.02	0.17%
<i>Developed and Disturbed Areas</i>				
Developed and Disturbed Areas	21,9837.17	1.84%	138,570.21	1.19%
Rural	12,261.86	0.10%	8,524.72	0.07%
Urban/Developed (General)	195.49	0.00%	191.84	0.00%
Urban-related Bare Soil	987.46	0.01%	987.35	0.01%
<i>Subtotal</i>	23,3281.98	1.95%	148,274.12	1.27%
<i>Great Basin Scrub</i>				
Basin Sagebrush	203.30	0.00%	203.30	0.00%
Blackbush	756.92	0.01%	756.92	0.01%
Great Basin - Desert Mixed Scrub	136.35	0.00%	136.35	0.00%
Great Basin Mixed Scrub	3,930.81	0.03%	3,930.81	0.03%
Intermontane deep or well-drained soil scrub	11,050.17	0.09%	10,849.00	0.09%
Intermontane seral shrubland	11,220.91	0.09%	6,738.06	0.06%
Inter-Mountain Dry Shrubland and Grassland	63,177.18	0.53%	60,143.49	0.51%
Intermountain Mountain Big Sagebrush Shrubland and steppe	8,180.10	0.07%	8,010.80	0.07%
Mojave and Great Basin upper bajada and toeslope	198.61	0.00%	198.61	0.00%

Table 4.
Vegetation Communities and Other Land Covers within the Desert Region of San Bernardino County

	Acres within County Boundary	% within County Boundary	Acres Within County Jurisdiction	% within County Jurisdiction
Rabbitbrush	2,727.48	0.02%	2,727.48	0.02%
<i>Subtotal</i>	101,581.82	0.85%	93,694.82	0.80%
<i>Joshua Tree Woodland</i>				
Joshua Tree	122.88	0.00%	122.88	0.00%
Mojave and Great Basin upper bajada and toeslope	615,344.21	5.15%	601,725.66	5.15%
<i>Subtotal</i>	615,467.08	5.15%	601,848.54	5.15%
<i>Juniper Woodlands</i>				
California Juniper (shrub)	1,269.74	0.01%	1,269.74	0.01%
Great Basin Pinyon - Juniper Woodland	163,731.12	1.37%	158,675.45	1.36%
<i>Subtotal</i>	165,000.87	1.38%	159,945.19	1.37%
<i>Marsh</i>				
Arid West freshwater emergent marsh	213.52	0.00%	198.85	0.00%
Californian warm temperate marsh/seep	409.39	0.00%	13.77	0.00%
Southwestern North American salt basin and high marsh	970.95	0.01%	928.66	0.01%
<i>Subtotal</i>	1,593.86	0.01%	1,141.27	0.01%
<i>Native Grasslands</i>				
North American warm desert dunes and sand flats	24,085.17	0.20%	24,085.17	0.21%
Southern Great Basin semi-desert grassland	252.55	0.00%	252.55	0.00%
<i>Subtotal</i>	24,337.71	0.20%	24,337.71	0.21%
<i>Non-Native Grassland</i>				
Annual Grasses and Forbs	33.46	0.00%	33.46	0.00%
California Annual and Perennial Grassland	72,491.02	0.61%	63,183.50	0.54%
California annual forb/grass vegetation	2,500.01	0.02%	2,431.84	0.02%

Table 4.
Vegetation Communities and Other Land Covers within the Desert Region of San Bernardino County

	Acres within County Boundary	% within County Boundary	Acres Within County Jurisdiction	% within County Jurisdiction
<i>Subtotal</i>	75,024.48	0.63%	65,648.80	0.56%
<i>Oak Woodlands and Forests</i>				
Californian broadleaf forest and woodland	43.78	0.00%	28.92	0.00%
Canyon Live Oak	183.74	0.00%	177.03	0.00%
<i>Subtotal</i>	227.52	0.00%	205.95	0.00%
<i>Pine Forests and Woodland</i>				
Californian montane conifer forest	37,779.31	0.32%	37,779.31	0.32%
Eastside Pine	126.57	0.00%	126.57	0.00%
Great Basin Pinyon - Juniper Woodland	14,766.29	0.12%	14,766.27	0.13%
Singleleaf Pinyon Pine	4,283.78	0.04%	4,283.78	0.04%
<i>Subtotal</i>	56,955.94	0.48%	56,955.92	0.49%
<i>Playa</i>				
North American Warm Desert Alkaline Scrub and Herb Playa and Wet Flat	193,552.89	1.62%	193,516.78	1.66%
Southwestern North American salt basin and high marsh	131.15	0.00%	104.87	0.00%
North American warm desert dunes and sand flats	57.19	0.00%	57.19	0.00%
Playa	26,677.61	0.22%	26,677.61	0.23%
Southwestern North American salt basin and high marsh	14,141.76	0.12%	14,141.76	0.12%
<i>Subtotal</i>	234,560.60	1.96%	234,498.21	2.01%

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<i>Riparian Forest and Woodland</i>				
North American warm desert dunes and sand flats	24,041.07	0.20%	23,471.40	0.20%
Sonoran-Coloradan semi-desert wash woodland/scrub	19.69	0.00%	19.69	0.00%
Southwestern North American riparian evergreen and deciduous woodland	3,191.02	0.03%	1,877.96	0.02%
<i>Subtotal</i>	27,251.78	0.23%	25,369.05	0.22%
<i>Riparian Scrub</i>				
Madrean Warm Semi-Desert Wash Woodland/Scrub	6.73	0.00%	6.73	0.00%
Southwestern North American riparian/wash scrub	10,104.47	0.08%	8,720.05	0.07%
Willow	31.94	0.00%	31.94	0.00%
Willow (Shrub)	4.85	0.00%	4.85	0.00%
<i>Subtotal</i>	10,147.99	0.08%	8,763.57	0.08%
<i>Riversidean Alluvial Fan Sage Scrub</i>				
Mojavean semi-desert wash scrub	875.82	0.01%	837.08	0.01%
<i>Subtotal</i>	875.82	0.01%	837.08	0.01%
<i>Sonoran and Mojavean Desert Scrub</i>				
Arizonan upland Sonoran desert scrub	23,647.46	0.20%	23,559.84	0.20%
Creosote Bush	115.02	0.00%	115.02	0.00%
Desert Mixed Shrub	914.60	0.01%	914.60	0.01%
Intermontane deep or well-drained soil scrub	58,805.00	0.49%	57,722.41	0.49%
Intermontane seral shrubland	6,350.96	0.05%	6,304.54	0.05%
Inter-Mountain Dry Shrubland and Grassland	6.73	0.00%	6.73	0.00%
Lower Bajada and Fan Mojavean - Sonoran desert scrub	8,025,406.60	67.17%	7,910,947.70	67.71%
Mojave and Great Basin upper bajada and toeslope	574,705.79	4.81%	572,630.37	4.90%
Mojavean semi-desert wash scrub	13,784.35	0.12%	12,801.12	0.11%
North American warm desert dunes and sand flats	1,367.79	0.01%	1,367.79	0.01%
Sonoran-Coloradan semi-desert wash woodland/scrub	10,184.11	0.09%	9,727.81	0.08%
<i>Subtotal</i>	8715288.42	72.95%	8,596,097.93	73.58%

**DRAFT SAN BERNARDINO COUNTYWIDE PLAN
BIOLOGICAL RESOURCES EXISTING CONDITIONS
SECTION 4 – EXISTING CONDITIONS—DESERT REGION**

<i>Undifferentiated Chaparral Scrub</i>				
Californian mesic chaparral	1,586.38	0.01%	1,222.31	0.01%
Californian xeric chaparral	13,771.34	0.12%	10,437.82	0.09%
Chamise	195.34	0.00%	195.34	0.00%
Curlleaf Mountain Mahogany	50.72	0.00%	50.72	0.00%
Great Basin - Mixed Chaparral Transition	4,060.45	0.03%	4,060.45	0.03%
Lower Montane Mixed Chaparral	65.59	0.00%	65.59	0.00%
Scrub Oak	499.91	0.00%	499.91	0.00%
Semi-Desert Chaparral	42.56	0.00%	42.56	0.00%
Soft Scrub Mixed Chaparral	6.56	0.00%	6.56	0.00%
Tucker / Muller Scrub Oak	317.04	0.00%	317.04	0.00%
Upper Montane Mixed Chaparral	13.86	0.00%	13.86	0.00%
Western Mojave and Western Sonoran Desert borderland chaparral	15,761.11	0.13%	14,730.77	0.13%
<i>Subtotal</i>	<i>36,370.84</i>	<i>0.30%</i>	<i>31,642.92</i>	<i>0.27%</i>
<i>Waterway</i>				
Intermittent Stream Channel	10.54	0.00%	10.54	0.00%
Madrean Warm Semi-Desert Wash Woodland/Scrub	5,877.64	0.05%	4,767.62	0.04%
Open Water	6,864.18	0.06%	6,699.95	0.06%
Riparian	218.13	0.00%	69.88	0.00%
Wetland	2,118.21	0.02%	1,647.72	0.01%
<i>Subtotal</i>	<i>15,088.70</i>	<i>0.13%</i>	<i>13,195.72</i>	<i>0.11%</i>
Grand Total	11,947,591.60		11,683,178.32	

Note: Table updated March 2019

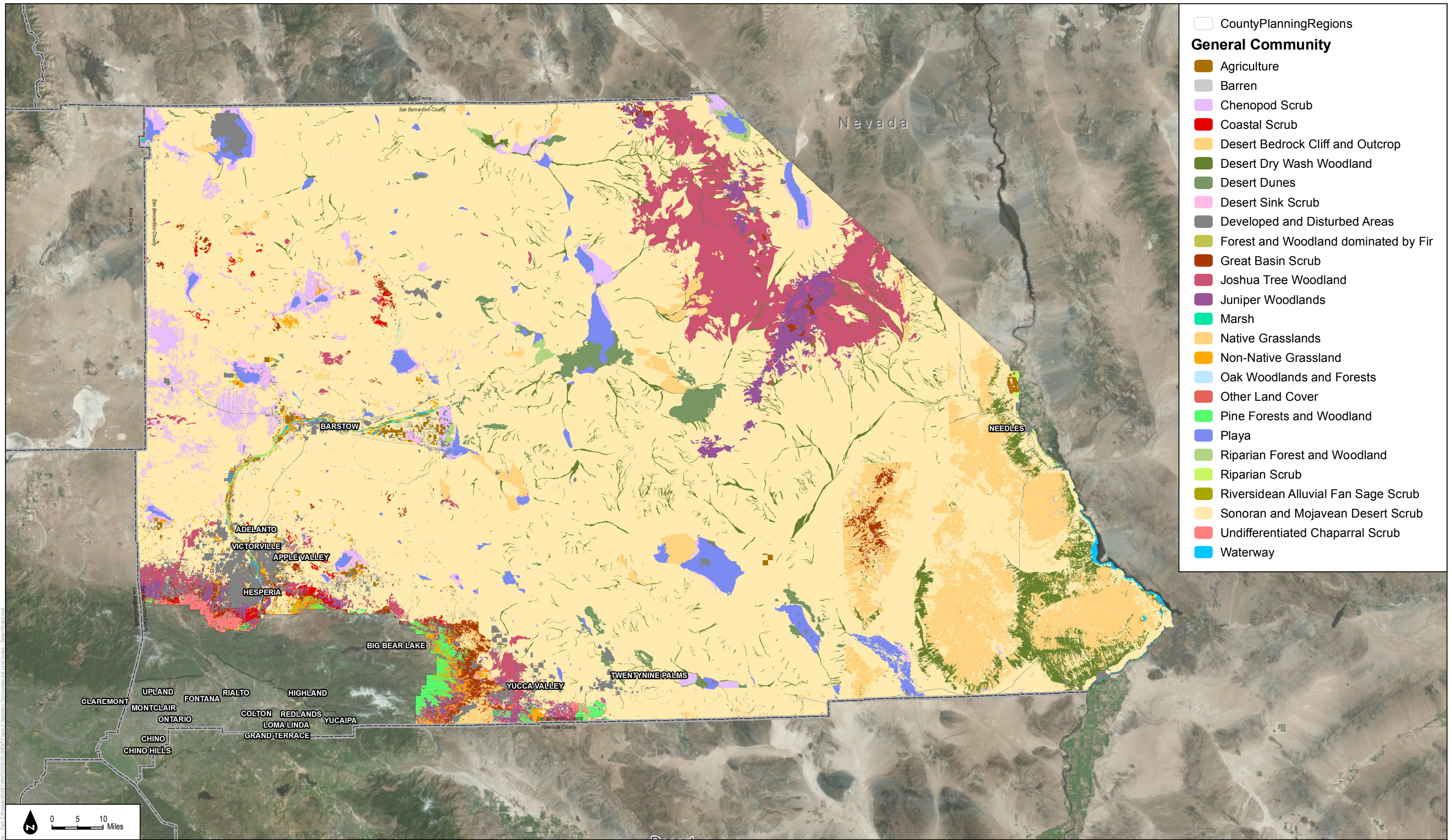


FIGURE 4

Vegetation Communities and Land Covers - Desert Region

SOURCE: Bing Maps, 2015; CDFG, 2015

San Bernardino Countywide Plan - Biological Resources

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Agriculture

The agriculture general community composes approximately 0.2% (21,758.3 acres) of the Desert Region (Table 4) and includes row and field crops, orchards, and vineyards. Agricultural lands are not considered a sensitive biological community (CDFG 2010).

Barren

Barren lands compose a very small portion of the Desert Region and cover less than 0.1% (55.8 acres) (Table 4). Barren lands are not considered a sensitive biological resource (CDFG 2010).

Chenopod Scrub

The chenopod scrub general community composes approximately 2.1% (254,159.9 acres) of the Desert Region and includes four groups: lower bajada and fan Mojavean–Sonoran desert scrub, North American warm desert bedrock cliff and outcrop, shadscale–saltbush cool semi-desert scrub, and southwestern North American salt basin and high marsh (Table 4). This general community category includes dominant shrubs, specifically saltbushes or mixed stands of saltbush which belong to the chenopod family. The North American salt basin and high marsh group contains alliances that are considered sensitive (CDFG 2010).

Coastal Scrub

The coastal scrub general community composes approximately 0.2% (27,468.1 acres) of the Desert Region and includes two groups: central and south coastal California seral scrub and central and south coastal Californian coastal sage scrub (Table 4). Coastal scrub is composed of a variety of soft, low shrubs, characteristically dominated by drought-deciduous species with scattered evergreen shrubs and typically develops on xeric slopes (Holland 1986). Central and south coastal California seral scrub and central and south coastal Californian coastal sage scrub groups contain alliance and associations that are considered sensitive biological resources (CDFG 2010).

Desert Bedrock Cliff and Outcrop

The desert bedrock cliff and outcrop community composes approximately 6.7% (804,759.7 acres) of the Desert Region and includes one group: North American warm desert bedrock cliff and outcrop group (Table 4), which is characterized by areas in which vegetation is largely absent. Desert bedrock cliff and outcrop is not considered a sensitive biological resource (CDFG 2010).

Desert Dry Wash Woodland

The desert dry wash woodland community composes approximately 3.3% (393,889.2 acres) of the Desert Region and includes four groups: Madrean warm semi-desert wash woodland/scrub, Mojavean semi-desert wash scrub, Sonoran–Coloradan semi-desert wash woodland/scrub, and southwestern North American riparian/wash scrub (Table 4). This community occurs in defined desert washes that are distinctly different in plant composition and/or cover compared to adjacent upland vegetation types. Typical species occurring in this category include catclaw acacia, desert lavender (*Hyptis emoryi*), honey mesquite (*Prosopis glandulosa*), screwbean mesquite (*P. pubescens*), desert willow (*Chilopsis linearis*), smoke tree, blue paloverde (*Parkinsonia florida*), and desert ironwood. This community provides important habitat functions to desert wildlife including food, cover, and breeding habitat, and includes alliances and associations that are considered sensitive community types (CDFG 2010).

Desert Dunes

The desert dunes community composes approximately 1.0% (114,558.4 acres) of the Desert Region and includes one group: North American warm desert dunes and sand flats (Table 4). This community is characterized by open dunes, dune aprons, or sand flats in which vegetation is sparse to very open. All of the alliances within this group are considered rare based on their state ranking, and this is a sensitive community type (CDFG 2010).

Desert Sink Scrub

The desert sink scrub community composes approximately 0.2% (19,978.3 acres) of the Desert Region and includes one group: southwestern North American salt basin and high marsh (Table 4). It is typically restricted to alkali or salt basins, spring margins, or river terraces with salt or alkali deposits. All of the alliances within this group are considered rare based on their state ranking (CDFG 2010), and this is a sensitive community type .

Developed and Disturbed Areas

Developed and disturbed areas compose approximately 2.1% (255,961.4 acres) of the Desert Region and include two land cover types: developed and disturbed areas and rural (Table 4). Developed areas include buildings, structures, homes, parking lots, paved roads, and maintained areas and do not support natural vegetation. This category also includes areas adjacent to developed areas with ornamental vegetation. The CDFG does not consider developed and disturbed areas a sensitive biological resource (CDFG 2010).

Great Basin Scrub

Great basin scrub general communities compose approximately 0.8% (94,546.5 acres) of the Desert Region and include four groups: intermontane deep or well-drained soil scrub, intermontane seral shrubland, inter-mountain dry shrubland and grassland, intermountain mountain big sagebrush shrubland and steppe (Table 4). These communities occur at montane elevations generally in well drained soils and include stands of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and stands dominated by Nevada joint fir (*Ephedra nevadensis*), Mormon tea (*E. viridis*), needleleaf rabbitbrush (*Ericameria teretifolia*), spiny hop sage (*Grayia spinosa*), winterfatland (*Krascheninnikovia lanata*), Anderson's boxthorn (*Lycium andersonii*), peach thorn (*L. cooperi*), bitter brush (*Purshia tridentata*), *Encelia* (*actoni*, *virginensis*), Cooper's goldenbush (*Ericameria cooperi*), rubber rabbitbrush (*E. nauseosa*), and broom snake weed (*Gutierrezia sarothrae*). The intermontane deep or well-drained soil scrub and intermontane seral shrubland includes alliances that are considered sensitive biological resources (CDFG 2010).

Joshua Tree Woodland

Joshua tree woodland general community composes approximately 5.2% (618,905.6 acres) of the Desert Region and includes one group: Mojave and Great Basin upper bajada and toeslope (Table 4). This community consists of Joshua trees in an open to intermittent tree canopy over an open to intermittent ground layer that may include perennial grasses and seasonal annuals (Sawyer et al. 2009). Joshua trees are a protected resource under the Native Desert Plant Protection section of the existing Development Code, and are considered a sensitive biological resource.

Juniper Woodlands

The juniper woodlands general community composes approximately 1.4% (166,403.1 acres) of the Desert Region and includes one group: Great Basin pinyon–juniper woodland (Table 4). This community includes California juniper (*Juniperus californica*) as the dominant or co-dominant small tree in the canopy with a sparse or grassy ground layer. This community occurs on alluvial fans, valley bottoms, slopes, ridges, and valleys that contain porous, rocky, coarse, sandy or silty soils that are often shallow. Juniper woodland alliances within the Desert Region are not considered a sensitive biological resource (CDFG 2010).

Marsh

Marsh general communities compose a very small portion of the Desert Region totaling approximately <0.1% (1,600.8 acres). This general community includes three groups: arid west freshwater emergent marsh, California warm temperate marsh/seep, and southwestern North American salt basin and high marsh (Table 4). Dominant species include sedges (*Carex* spp.), tules (*Scirpus* spp.), cattails (*Typha* spp.), spikerushes (*Eleocharis* spp.), rushes (*Juncus* spp.), or bulrushes (*Schoenoplectus* or *Bolboschoenus* spp.). Marshes are a wetland habitat type generally rare in the Desert Region and are therefore considered a sensitive biological resource.

Native Grassland

Native grassland general communities compose approximately 0.2% (24,573.6 acres) of the Desert Region and include two groups: North American warm desert dunes and sand flats, in which vegetation is sparse to very open (less than 10% cover) except for annual blooms in favorable years, and southern Great Basin semi-desert grassland (Table 4), which is dominated by perennial grasses. The alliances within this group are considered rare based on their state ranking (CDFG 2010) and this is a sensitive community type.

Non-Native Grasslands

The non-native grasslands community composes approximately 0.6% (75,752.7 acres) of the Desert Region and includes two groups: California annual and perennial grassland, which is dominated by non-native grasses and herbs, and California annual forb/grass vegetation, in which non-native forbs and grasses dominate but herbs are characteristic and evenly disturbed across the herbaceous layer (Table 4). The non-native grasslands are not considered a sensitive biological resource (CDFG 2010).

Oak Woodlands and Forests

The oak woodlands and forests general community composes <0.1% (118.1 acres) of the Desert Region and includes one group: Californian broadleaf forest and woodland (Table 4). Oak woodlands and forest have oak trees (*Quercus* spp.) as the dominant or co-dominant tree, with a continuous to open canopy and a sparse to intermittent shrub canopy and sparse or grassy ground layer. The oak woodlands and forests are considered sensitive in the County due to their limited extent and unique habitat value.

Pine Forests and Woodland

Pine forests and woodland general communities compose approximately 0.4% (52,329.6 acres) of the Desert Region and include two groups: Californian montane conifer forest and Great Basin pinyon–juniper woodland (Table 4). Californian montane conifer forests are characterized by an evenly distributed presence of bigcone Douglas-fir (*Pseudotsuga macrocarpa*) in the canopy, usually with canyon live oak (*Quercus chrysolepis*) as a co-dominant with up to three times the cover of bigcone Douglas-fir. Great Basin pinyon–juniper woodland includes more than 1% absolute cover of singleleaf pinyon (*Pinus monophylla*) that is evenly distributed throughout the stand and the stand may have equal or higher cover of California juniper, Joshua tree, and/or Tucker oak (*Quercus john-tuckeri*) (VegCAMP and AIS 2013). Pine forests and woodland is not considered a sensitive biological resource (CDFG 2010).

Playa

Playas compose approximately 2.0% (234,872.6 acres) of the Desert Region and include five groups: North American warm desert alkaline scrub and herb playa and wet flat, North American warm desert bedrock cliff and outcrop, North American warm desert dunes and sand flats, playa, and southwestern North American salt basin and high marsh (Table 4). This includes dense herbaceous stands that are wet, flooded, or moist throughout the growing season; areas in which vegetation is largely absent; dunes, dune aprons, or sand flats in which vegetation is sparse to very open (less than 10% cover) except for annual blooms in favorable years; and alkali or salt basins, spring margins, or river terraces with salt or alkali deposits. Four groups, North American warm desert alkaline scrub and herb playa and wet flat, North American warm desert dunes and sand flats, playa, and southwestern North American salt basin and high marsh, include alliances or associations that are considered sensitive biological resources (CDFG 2010).

Riparian Forest and Woodland

Riparian forest and woodland general communities compose approximately 0.2% (27,495.0 acres) of the Desert Region and include three groups: North American warm desert dunes and sand flats, Sonoran–Coloradan semi-desert wash woodland/scrub, and southwestern North American riparian evergreen and deciduous woodland (Table 4). This community occurs along stream corridors and desert washes and is characterized by riparian trees or tall shrubs, including Fremont cottonwood (*Populus fremontii*), California sycamore (*Platanus racemosa*), and/or willows (*Salix* spp.) It also includes dunes, dune aprons, or sand flats in which vegetation is sparse to very open. All of the riparian forest and woodlands groups contain alliances that are considered sensitive biological resources (CDFG 2010).

Riparian Scrub

Riparian scrub general communities compose approximately <0.1% (10,450.0 acres) of the Desert Region and includes two groups: Madrean warm semi-desert wash woodland/scrub and southwestern North American riparian/wash scrub (Table 4). The majority of this community is characterized by native or non-native riparian shrubs such as baccharis (*Baccharis* spp.), elderberry (*Sambucus* spp.), swampprivet (*Forestiera* spp.), narrowleaf willow (*Salix exigua*), or arroyo willow (*S. lasiolepis*). There may be scattered, unevenly distributed Fremont cottonwood and other willow species or other riparian trees at less than 10% cover (VegCAMP and AIS 2013). Both Madrean warm semi-desert wash woodland/scrub and southwestern North American riparian/wash scrub groups contain alliances that are considered sensitive biological resources (CDFG 2010).

Riversidean Alluvial Fan Sage Scrub

The Riversidean alluvial fan sage scrub general community composes <0.1% (895.3 acres) of the Desert Region and includes one group: Mojavean semi-desert wash scrub (Table 4), which occurs within alluvial fans and dry washes on low-gradient slopes at elevations up to 5,000 feet amsl (1,524 meters amsl). This alliance is identified by a combination of species including scale broom (*Lepidospartum squamatum*), Eastern Mojave buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemisia californica*), white sage (*Salvia apiana*), *Encelia* spp., *Opuntia* spp., chaparral yucca (*Yucca whipplei*), *Rhus* spp., and California juniper. Riversidean alluvial fan sage scrub contains alliances that are considered sensitive communities (CDFG 2010) and is considered a sensitive community in the County.

Sonoran and Mojavean Desert Scrub

Sonoran and Mojavean desert scrub general communities compose a majority of the Desert Region, covering approximately 72.9% (8,739,583.5 acres), and include nine groups: Arizonan upland Sonoran desert scrub, intermontane deep or well-drained soil scrub, intermontane seral shrubland, inter-mountain dry shrubland and grassland, lower bajada and fan Mojavean–Sonoran desert scrub, Mojave and Great Basin upper bajada and toeslope, Mojavean semi-desert wash scrub, North American warm desert dunes and sand flats, and Sonoran–Coloradan semi-desert wash woodland/scrub (Table 4). Sonoran and Mojavean desert scrub contains six groups that have alliances that are considered sensitive biological resources (CDFG 2010).

Undifferentiated Chaparral Scrub

Undifferentiated chaparral scrub general communities compose approximately 0.3% (31,720.2 acres) of the Desert Region and include three groups: Californian mesic chaparral, Californian xeric chaparral, and western Mojave and western Sonoran desert borderland chaparral (Table 4).

This community includes a variety of mixed or single-species, evergreen, sclerophyllous shrubs including alderleaf mountain mahogany (*Cercocarpus montanus*), holly leaf cherry (*Prunus ilicifolia*), scrub oak (*Quercus berberidifolia*), chamise (*Adenostoma fasciculatum*), bigberry manzanita (*Arctostaphylos glauca*), hoaryleaf ceanothus (*Ceanothus crassifolius*), flannelbush (*Fremontodendron* spp.), or black sage (*Salvia mellifera*). It also includes two-tiered shrublands with one layer of moderately open to intermittent cover of sclerophyll shrubs and another shorter layer of drought deciduous subshrubs with at least some presence of xerophylls, such as pricklypear (*Opuntia* spp.), cholla (*Cylindropuntia* spp.), and yucca (*Yucca* or *Hesperoyucca* spp.). Many drought-deciduous species with desert affinities, such as goldenbush (*Ericameria* spp.) and Acton's brittlebush (*Encelia actoni*), may also be present; however, true chaparral species such as chamise, manzanita, and ceanothus species may be absent. One undifferentiated chaparral scrub group, Californian xeric chaparral, contains alliances that are considered sensitive biological resources (CDFG 2010).

Waterway

Waterways compose approximately 0.2% (18,780.6 acres) of the Desert Region and include four types: Madrean warm semi-desert wash woodland/scrub, open water, riparian, and wetland (Table 4). Waterways are a land cover and are not considered a sensitive vegetation community; however, waterways often provide valuable water resources that would be considered sensitive on a case-by-case basis.

4.3.2 Special-Status Species

Within the Desert Region, the USFWS has designated critical habitat for several plant and wildlife species as summarized in Table 5 and depicted on Figure 5, Critical Habitat – Desert Region.

Table 5
Acres of Critical Habitat in the Desert Region

Critical Habitat Species		Total acres in Desert Region	Acres within County Jurisdiction in Desert Region
Common Name	Scientific Name		
Plants			
Cushenbury buckwheat	<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	2,462	2,455

Table 5
Acres of Critical Habitat in the Desert Region

Critical Habitat Species		Total acres in Desert Region	Acres within County Jurisdiction in Desert Region
Common Name	Scientific Name		
Cushenbury milk-vetch	<i>Astragalus albens</i>	2,137	2,133
Cushenbury oxytheca	<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i>	1,266	1,260
Lane mountain milkvetch	<i>Astragalus jaegerianus</i>	14,177	14,177
Parish's daisy	<i>Erigeron parishii</i>	2,821	2,806
<i>Wildlife</i>			
arroyo toad	<i>Anaxyrus californicus</i>	4,276	1,337
desert tortoise	<i>Gopherus agassizii</i>	3,561,131	3,555,069
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	7,207	3,829
western yellow-billed cuckoo ^a	<i>Coccyzus americanus occidentalis</i>	4,709	2,756
bonytail chub	<i>Gila elegans</i>	9,271	6,539
razorback sucker	<i>Xyrauchen texanus</i>	1,160	142

Source: USFWS 2015a.

Note: ^a Proposed critical habitat.

Special-Status Species Occurrence Summary

Appendix C provides a summary of the special-status species that have been documented within the Desert Region of San Bernardino County, and includes information on status, distribution, and habitat associations.

A total of 176 special-status plant species have been documented in the region, including 6 species that are federally listed as endangered or threatened, 2 that are listed as state endangered, and 168 non-listed species. The 8 listed plant species include Cushenbury oxytheca (federally endangered (FE)), Cushenbury milk-vetch (FE), Cushenbury buckwheat (FE), Lane Mountain milk-vetch (*Astragalus jaegerianus*) (FE), Parish's daisy (federally threatened (FT)), Mojave tarplant (*Deinandra mohavensis*) (state endangered (SE)), Thorne's buckwheat (*Eriogonum thornei*) (SE), and triple-ribbed milk-vetch (*Astragalus tricarinatus*) (FE).

A total of 58 special-status animal species have been documented, including 11 species that are federally endangered or threatened, 17 that are state endangered or threatened, one state threatened candidate, 8 that are state fully protected, and 35 that are non-listed species. The 19 listed species known to occur in the Desert Region are arroyo toad (FE), California red-legged frog (FT), desert tortoise (FT), least Bell's vireo (*Vireo bellii pusillus*) (nesting) (FE, SE), southwestern willow flycatcher (nesting) (FE, SE), western yellow-billed cuckoo (nesting) (FT),

western snowy plover (nesting) (FT), bonytail (FE, SE), Colorado pikeminnow (FE, SE, FP), Mohave tui chub (*Siphateles bicolor mohavensis*) (FE, SE), razorback sucker (*Xyrauchen texanus*), California black rail (*Laterallus jamaicensis coturniculus*) (ST), Swainson's hawk (nesting) (ST), bald eagle (nesting and wintering) (SE, FP), Arizona Bell's vireo (*Vireo bellii arizonae*) (nesting) (SE), elf owl (*Micrathene whitneyi*) (nesting) (SE), Gila woodpecker (*Melanerpes uropygialis*) (SE), gilded flicker (*Colaptes chrysoides*) (SE), and Mohave ground squirrel (ST). The one state-threatened candidate species is Townsend's big-eared bat (*Corynorhinus townsendii*). Finally, the tricolored blackbird (*Agelaius tricolor*) is being evaluated in 2016 for candidacy under CESA, triggering a 12-month period during which CDFW will conduct a status review. As a candidate species, the tricolored blackbird receives the same legal protection afforded to an endangered or threatened species (California Fish and Game Code, Section 2085).

4.4 Habitat Linkages and Wildlife Corridors

A number of efforts have been completed to identify and map potential corridors within the Desert Region of San Bernardino County. The paragraphs below summarize the results of these efforts, which provide a basis for listing and prioritizing wildlife linkages for conservation planning efforts. Locations of linkages are shown on Figure 6, Habitat Connectivity – Desert Region.

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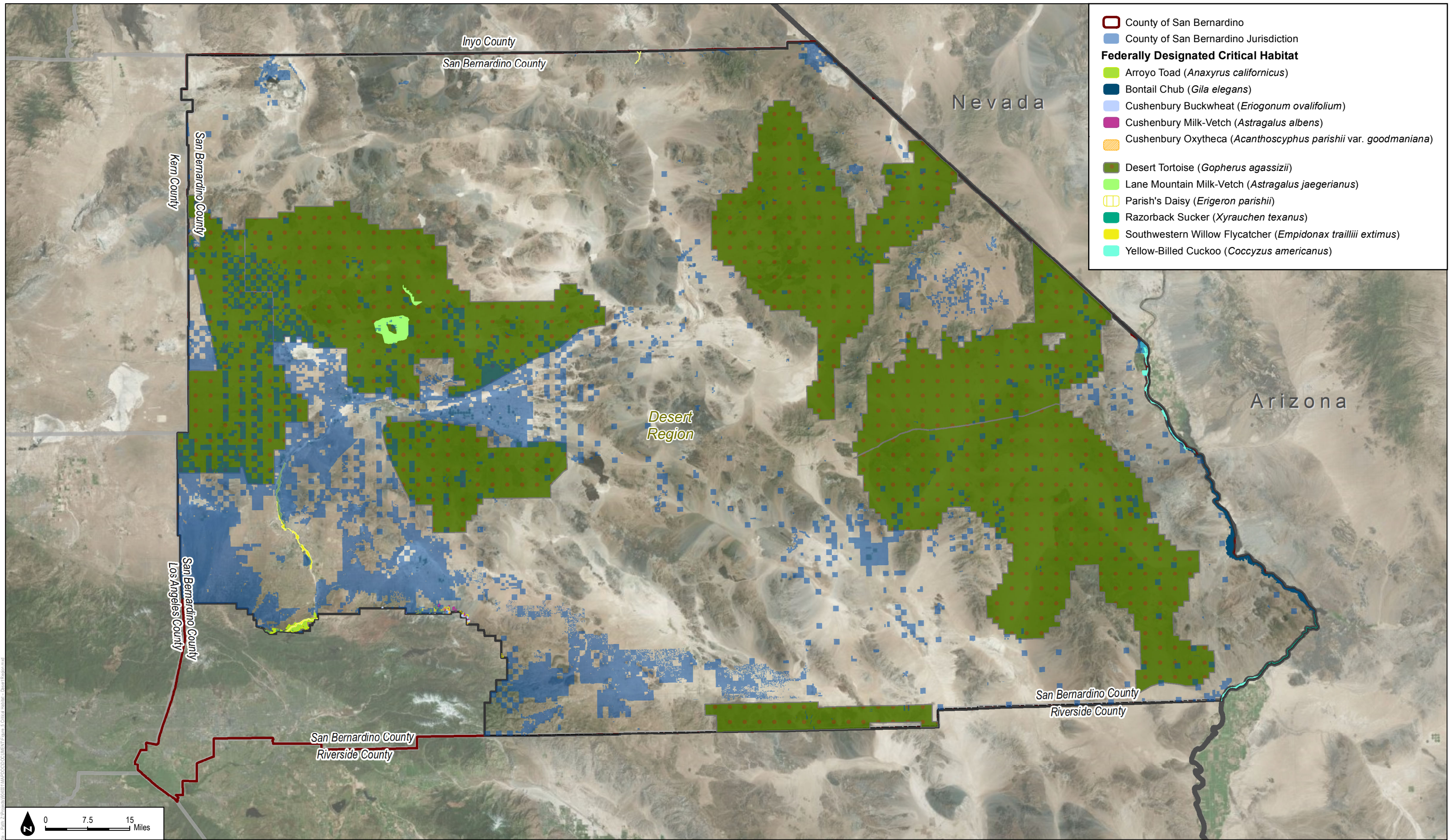
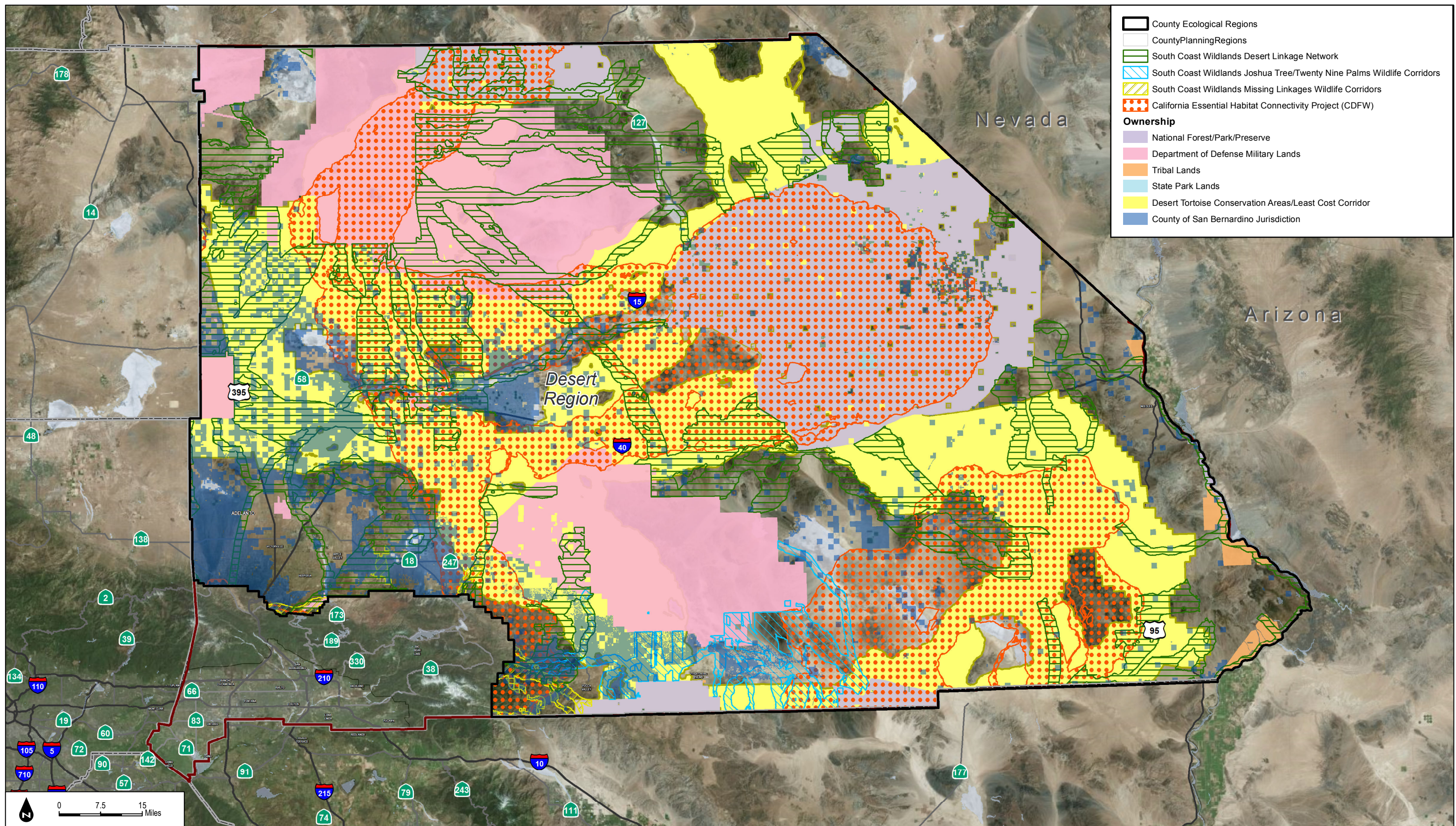


FIGURE 5
Critical Habitat - Desert Region

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South Coast Missing Linkages Project

A summary of the corridors identified as a result of this effort is provided below and detailed descriptions can be found in South Coast Wildlands (2008).

San Gabriel–San Bernardino Connection. This linkage provides connectivity between two expansive areas of the Angeles and San Bernardino National Forests and includes three roughly parallel swaths through the Cajon Wash and Pass to accommodate diverse species and ecosystem functions. It partially overlaps the Desert Region of San Bernardino County. This linkage provides habitat for special-status species wildlife such as American badger (*Taxidea taxus*). I-15 and State Route 138 (SR-138) are the major transportation routes that cross the linkage and pose the most substantial barriers to wildlife movement. There are currently three bridges along I-15 that accommodate animal movement.

San Bernardino–Little San Bernardino Connection. This linkage connects San Bernardino National Forest with Joshua Tree National Park and includes five major swaths. It occurs primarily in the Desert Region of San Bernardino County. Species expected to use this linkage include Nelson’s bighorn sheep (*Ovis canadensis nelsoni*), cougar (*Puma concolor*), bobcat (*Lynx rufus*), and gray fox (*Urocyon cinereoargenteus*). SR-62 is the major transportation route that crosses the linkage.

San Bernardino–San Jacinto Connection. This linkage comprises five swaths and provides a connection between the San Bernardino and San Jacinto Mountains. It occurs partially within San Bernardino County and does not intersect any major transportation corridors. Species expected to use this linkage include bobcat.

Joshua Tree–Twentynine Palms Connection

Penrod et al. (2008) separately studied and modeled habitat linkages between Joshua Tree National Park and Marine Corps Air Ground Combat Center Twentynine Palms through the Morongo Basin. The two areas to be served by this linkage support a great diversity of species (Penrod et al. 2008). The Joshua Tree–Twentynine Palms Connection occurs in an ecological transition zone between the Mojave and Sonoran (Colorado) desert ecoregions and encompasses a unique and diverse assemblage of plant communities. The Little San Bernardino and Eagle Mountains, which are extensions of the Transverse Ranges, separate the Mojave Desert from the Colorado Desert. Focal species include American badger, bobcat, Nelson’s bighorn sheep, and desert tortoise. SR-62 and SR-247 are the only major transportation routes in the linkage.

California Desert Connectivity Project

Penrod et al. 2012 discusses a multitude of corridors in San Bernardino County that link existing blocks of habitat, including China Lake North and South Ranges, Edwards Air Force Base, Kingston Mesquite Mountains, Mojave National Preserve, Stepladder and Turtle Mountains, Whipple Mountains, Twentynine Palms and Newberry–Rodman, and Joshua Tree National Park, all located with the Desert Region of San Bernardino County.

Desert Tortoise Linkages between Conservation Areas

Averill-Murray et al. (2013) identified potential linkages in the Desert Region of San Bernardino County between the following tortoise conservation areas: Chemehuevi, Joshua Tree National Park, Pinto Mountains, Ord-Rodman, Freemont Kramer, Mojave National Preserve, Superior Cronese, Death Valley, Ivanpah, and Greenwater Valley (outside San Bernardino County).

San Bernardino County Open Space Overlay Map

Figure 7, Existing San Bernardino County Open Space Overlay – Desert Region, and Table 6 show the features within the San Bernardino County open space overlay map that overlap the Desert Region within County jurisdiction.

Table 6
San Bernardino County Open Space Overlay Features
in the Desert Region that Occur within County Jurisdiction

Feature	Type	Acres	Description
Mojave River	Wildlife Corridor	17,187.5	This wildlife corridor follows the alignment of the Mojave River from Lake Silverwood, through Hesperia and Victorville northward to past Barstow. The Mojave River is the major perennial river in the Desert Region, and is an area of extreme biological importance, containing rare desert riparian habitat (including habitat that supports arroyo toad, least Bell's vireo, southwestern willow flycatcher, Mojave river vole, yellow-breasted chat, and summer tanager). The Mojave River historically supported Mohave tui chub, but it was extirpated in the 1960s and has been replaced by a number of non-native species. Closer to Barstow, the Mojave River is also a source for wind-blown sands that support species such as the Mohave fringe-toed lizard.
Deep Creek	Wildlife Corridor	63.2	This wildlife corridor follows the alignment of Grass Valley Creek near the Mojave River. The creek serves as a dispersion corridor to and from the national forest. This area contains riparian habitat and is suitable for least Bell's vireo and arroyo toad.
Rattlesnake Canyon	Wildlife Corridor	98.3	This corridor follows the alignment of Rattlesnake Canyon northward from the boundary of the national forest. This corridor contains important desert riparian habitat.

Table 6
San Bernardino County Open Space Overlay Features
in the Desert Region that Occur within County Jurisdiction

Feature	Type	Acres	Description
Grass Valley Creek	Wildlife Corridor	1.1	This wildlife corridor follows the alignment of Grass Valley Creek near the Mojave River. This area contains riparian habitat and is suitable for least Bell's vireo.
Little Horsethief Canyon	Wildlife Corridor	426.0	This wildlife corridor follows the alignment of Little Horsethief Canyon from Section R6WT3N to the junction with the Mojave River. This is one of the few locations in San Bernardino County occupied by arroyo toad. It also supports important riparian habitat and provides an important linkage to the Mojave River.
Sleepy Creek	Wildlife Corridor	5.8	This corridor follows the alignment of Sleepy Creek within the national forest. Sleepy Creek contains important riparian habitat on the desert side of the mountains.
Pipes Canyon	Wildlife Corridor	362.4	This corridor is located along the alignment of Pipes Canyon and Pipes Wash north of Little Morongo Canyon. This corridor contains important wildlife and riparian habitat particularly on the desert side of the mountains.
Moabi Wildlife Preserve Buffer	Buffer	640.1	This is a buffer adjacent to the Moabi Wildlife Preserve, extending several miles outward from the preserve boundaries. This area is identified primarily for its scenic values, although significant habitat also exists.
Joshua Tree Monument Buffer	Buffer	5981.6	This is the buffer area adjacent to the portion of the Joshua Tree National Monument within San Bernardino County, identified primarily for its scenic values, although significant biological values also exist.
Pacific Crest Trail	Buffer	404.8	This area follows the alignment of the Pacific Crest Trail from the boundary of the national forest to the Riverside County line. In addition to the trail, this area contains riparian and Nelson's bighorn sheep habitat.
Limestone Deposits	Policy Area	3,720.4	This encompasses an area of limestone deposits on the northern exposure of the San Bernardino Mountains, roughly from White Mountain to Blackhawk Mountain. This area provides habitat for Nelson's bighorn sheep. The limestone deposits support unique plants.
Lake Silverwood	Policy Area	15.3	This area encompasses the environs of Lake Silverwood, which is used as a seasonal perching area by the bald eagle.

4.5 Protected and Wilderness Areas

There are a number of large blocks of public/government lands in the Desert Region of San Bernardino County that afford varying degrees of protection for biological resources and have conservation value. A selection of these areas are described briefly in this section (see Figure 8, Conservation and Open Space Areas – Desert Region).

National Monuments

The Antiquities Act of 1906 authorizes the president to create national monuments on *federal lands* that contain objects of historic or scientific interest. Management goal for all monuments is

protection of the objects described in the specific proclamations. Monument designation can limit or prohibit future land uses, such as development or recreational uses. Limitations or prohibitions may be included in the proclamations themselves, accompanying administration statements, management plans developed by the agencies to govern monument lands, agency policies, or other sources. In general, existing uses of the land that are not precluded by the proclamations, and do not conflict with the purposes of the monument, may continue. Additionally, monument proclamations since 1996 typically have had protections for valid existing rights for land uses. Three national monuments in the Mojave Desert were established in February 2016.

Sand to Snow National Monument

The 154,000-acre Sand to Snow National Monument extends from BLM lands on the desert floor up to the San Gorgonio Wilderness on the San Bernardino National Forest. A total of 71,000 acres occur in the San Bernardino National Forest and 83,000 acres on BLM lands. Within the monument boundary, approximately 101,000 acres are managed as wilderness. This monument has a wide range of ecosystems that occur in the Desert Region of San Bernardino County.

This monument plays an integral role in the San Bernardino–Little San Bernardino Connection, as well as the San Bernardino–San Jacinto Connection.

Mojave Trails National Monument

The 1.6-million-acre Mojave Trails National Monument occurs on BLM lands and extends from east of Newberry Springs to west of Bullhead City on the state boundary between California and Nevada. It includes more than 350,000 acres of previously congressionally designated wilderness and is composed of rugged desert mountains, lava flows, and sand dunes. It overlaps several of the linkages discussed in the previous section.

Castle Mountains National Monument

The Castle Mountains area, bounded on three sides by Mojave National Preserve and the Nevada state line on the other, occurs in the eastern Mojave Desert. It completes the boundary of the Mojave National Preserve along the California–Nevada border and provides a linkage between the New York Mountains to the northwest and the Piute Mountains to the southeast. Species expected in this area includes Nelson’s bighorn sheep, Townsend’s big-eared bat, California leaf-nosed bat (*Macrotus californicus*), golden eagle, desert tortoise, Bendire’s thrasher (*Toxostoma bendirei*), and gray vireo (*Vireo vicinior*).

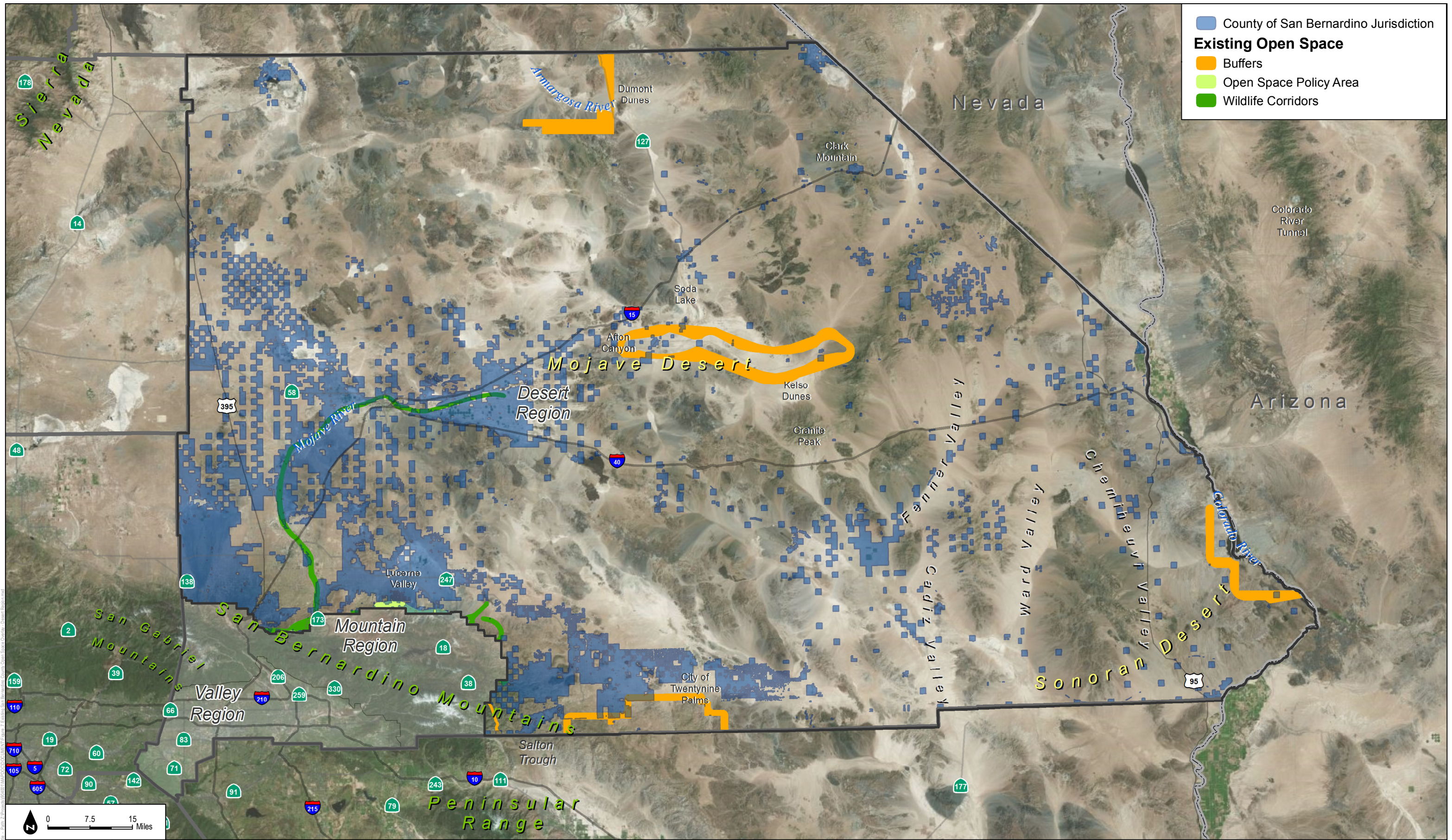


FIGURE 7

Existing San Bernardino County Open Space Overlay - Desert Region

SOURCE: Bing Maps, 2016

DUDEK

San Bernardino Countywide Plan - Biological Resources

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- County of San Bernardino Jurisdiction

California Protected Areas

Desert

Death Valley National Park

East Mojave National Scenic Area

Kelso Peak and Old Dad Mountains Wildlife Area

West Mojave Desert Ecological Reserve

County Ecological Regions

Open Space Areas

Adelanto North Open Space

Apple Valley HCP Proposed Connectivity

Barstow Open Space

BLM Resource Management Designations

Areas of Critical Environmental Concern

Multi-species Wildlife Habitat Management Areas

Wilderness Areas

Existing Conservation Areas

Angeles National Forest

San Bernardino National Forest

Death Valley National Park

Joshua Tree National Park

Mojave National Preserve

Havasu National Wildlife Refuge

National Monuments

CountyPlanningRegions

National Conservation Easement Database

California Protected Area Database

Other Lands

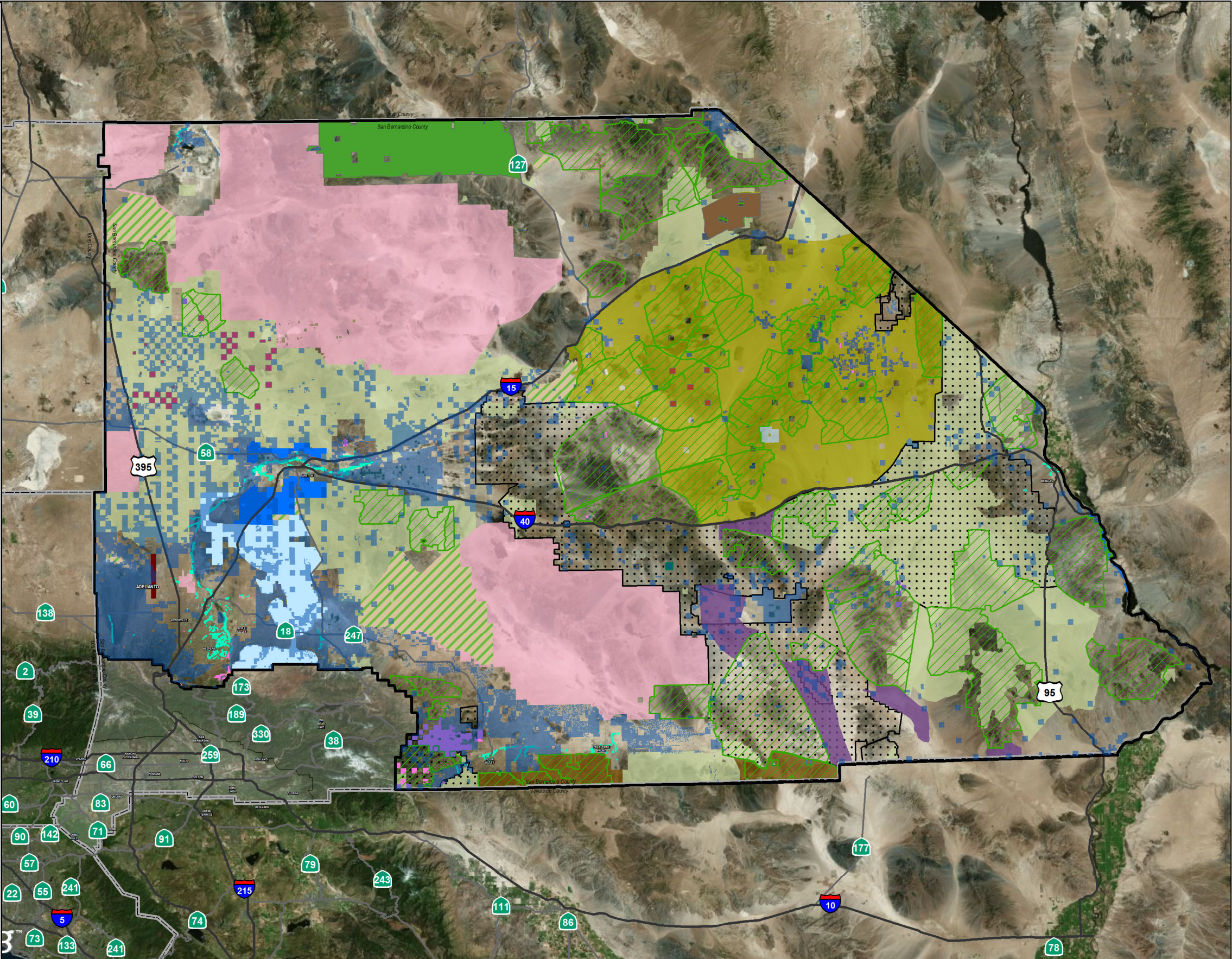
Department of Defense Military Lands

State Park Lands

Open OHV Lands

Flood Control District Easements*

Critical Biological Areas
- *All flood control easements are reserved for District purposes and are not available as a resource for the County or others as potential mitigation lands.



0 7.5 15 Miles

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Parks and Other Protected Areas

Joshua Tree National Park

Approximately 825,000 acres encompass Joshua Tree National Park. Two deserts join within the park boundary and are distinguishable by elevation. Below 3,000 feet amsl, the Colorado Desert is located within the eastern portion of the park and is characterized by creosote bush (*Larrea tridentata*), ocotillo (*Fouquieria splendens*), and cholla. Above 3,000 feet amsl lies the Mojave Desert, which is cooler and moister than the Colorado Desert. The Joshua tree is the defining feature within the Mojave. Five species of fan palm are found within the western portion of the park, which indicates naturally occurring water.

Death Valley National Park

Death Valley National Park as a whole encompasses approximately 3.4-million acres; however, only approximately 223,000 acres extend south into the Desert Region of San Bernardino County. The park is known for its extreme temperature ranges, as one of the hottest and driest places in North America during the summer months with little annual rainfall. It has a low elevation of approximately 282 feet below sea level. It is managed by NPS.

Mojave National Preserve

The Mojave National Preserve is a 1.6-million-acre preserve located in the Mojave Desert and is the third largest national park system in the contiguous United States. The Mojave Wilderness is located within the preserve and encompasses almost 700,000 acres. NPS manages the wilderness in accordance with the Wilderness Act, California Desert Protection Act, and other laws protecting cultural and historic sites (NPS 2009). A majority of the preserve is composed of Joshua tree forests as well as numerous dunes.

Big Morongo Canyon Preserve

Managed by BLM, Big Morongo Canyon Preserve is composed of 31,000 acres within the Little San Bernardino Mountains. This preserve contains one of the largest cottonwood and willow riparian habitats within the state of California. Currently, this refuge is designated as an Area of Critical Environment Concern.

Havasu National Wildlife Refuge

Located along the Colorado River, Havasu National Wildlife Refuge protects over 30 miles of river and shoreline protection, which provides essential habitat for many wildlife species,

including Nelson’s bighorn sheep and southwestern willow flycatcher. This is a U.S. national wildlife refuge and contains one of the few remaining natural stretches of the Lower Colorado River within Topock Gorge.

California Desert National Conservation Area

The California Desert National Conservation Area is one of the more expansive regions of the Desert Region, encompassing approximately 4.8 million acres within the region. As a whole, the area encompasses approximately 25 million acres in the Southern California desert, 10 million of which is administered by BLM. The conservation area was designated by Congress in 1976 with the goal of creating a comprehensive plan that would satisfy the interests of the surrounding areas, protect the environmental integrity of the region, and maintain long-term utilization as the area grew.

Imperial National Wildlife Refuge

The Imperial National Wildlife Refuge has approximately 26,000 acres and is located primarily along the Colorado River within the Sonoran Desert. Of this, approximately 7,200 acres are within San Bernardino County at the state border with Arizona. It is managed by USFWS. This wildlife refuge is important because it preserves wetland habitat within the desert.

East Mojave National Scenic Area

The East Mojave National Scenic Area was transferred from BLM to NPS in 1994 to become the Mojave National Preserve. What remains is approximately 22,000 acres jointly administered by BLM and the NPS.

Kelso Peak and Old Dad Mountains Wildlife Area

Kelso Peak and Old Dad Mountains Wildlife Area is composed of approximately 102,000 acres and is administered by CDFW. It is composed primarily of dry lake beds and low mountains, providing habitat for golden eagles and mountain sheep.

Pioneertown Mountains Preserve–Wildlands

Pioneertown Mountains Preserve is owned by the Wildlands Conservancy and is composed of 25,500 acres. The preserve is surrounded by the community of Pioneertown, the Sawtooth Mountains, and preserve lands adjacent to the San Bernardino National Forest. This preserve is an important linkage between Joshua Tree National Park, the Big Horn Mountains BLM Wilderness, and the San Bernardino National Forest.

Ecological Reserves

Fremont Valley Ecological Reserve

The Fremont Valley Ecological Reserve is composed of approximately 4,100 acres within the Mojave Desert. It is dominated by creosote bush scrub community and provides habitat for many mammals and reptiles.

West Mojave Desert Ecological Reserve

The West Mojave Desert Ecological Reserve is approximately 18,000 acres located within the Mojave Desert, just east of the Fremont Valley Ecological Reserve. It is dominated by creosote bush and burro weed.

Areas of Critical Environmental Concern

BLM has designated 52 Areas of Critical Environmental Concern within the Desert Region of San Bernardino County. By doing so, BLM can design, develop, and implement special management programs specific to each area, as well as specific actions that BLM does not directly implement. The 52 biological Areas of Critical Environmental Concern within the Desert Region include the following:

- Afton Canyon
- Amargosa River
- Amboy Crater
- Barstow woolly sunflower
- Bedrock Spring
- Bendire's thrasher
- Big Morongo Canyon
- Bigelow cholla
- Black Mountain
- Calico Early Man Site
- Carbonate Endemic Plants RNA
- Chemehuevi DWMA
- Christmas Canyon
- Clark Mountain
- Coolgardie Mesa
- Cronese Basin
- Dead Mountains
- Denning Springs
- Fremont-Kramer DWMA
- Halloran Wash
- Harper Dry Lake
- Ivanpah DWMA
- Juniper Flats
- Kingston Range
- Manix
- Marble Mountain Fossil Bed
- Mesquite Hills/Crucero
- Mesquite Lake
- Mojave fishhook cactus
- Mohave fringe-toed lizard

- Mojave monkeyflower
- Mountain Pass Dinosaur Trackway
- Ord-Rodman DWMA
- Parish's phacelia
- Patton's Iron Mountain Divisional Camp
- Pinto Mountains DWMA
- Pisgah
- Piute-Fenner DWMA
- Rainbow Basin/Owl Canyon
- Red Mountain Spring
- Rodman Mountains Cultural Area
- Salt Creek Hills
- Shadow Valley DWMA
- Soggy Dry Lake Creosote Rings
- Steam Well
- Superior-Cronese DWMA
- Trona Pinnacles
- Turtle Mountains
- Upper Johnson Valley Yucca Rings
- West Paradise
- Whipple Mountains
- Whitewater Canyon

5 EXISTING CONDITIONS—MOUNTAIN REGION

5.1 Mountain Region – Executive Summary

A substantial portion of the Mountain Region is occupied by the San Bernardino National Forest with just under 14% of the Mountain Region within County jurisdiction. Although a large portion of the Mountain Region is already under public management through the National Forest, there are opportunities for management of biological resources within County jurisdiction. Meadows, while accounting for a small area of the Mountain Region, provide high biological value and most meadow associations are designated sensitive communities. Additionally, approximately 63% of the mapped meadow communities within the Mountain Region are under County jurisdiction, providing the County with a unique opportunity to manage this habitat. Oak woodlands also provide high habitat value and the majority of the oak woodlands within the Mountain Region is under County jurisdiction, making this community a high priority for management. Finally, riparian and wetland communities would be a priority for management and conservation.

The Mountain Region is split into two major watersheds, with the southern and western portions of this region flowing southerly into the Santa Ana River watershed and the northern portion flowing northerly into the Mojave River watershed. The Mountain Region has several large lakes which provide unique resource value: Big Bear Lake, Lake Arrowhead, and Silverwood Lake. The Mountain Region also has soil associations that provide unique habitat value for endemic plant species including pebble plain, with 10 mapped pebble plain complexes in the Mountain Region, and carbonate soils. Management and conservation of these soil complexes would be a high priority.

Within the Mountain Region, the USFWS has designated critical habitat for 10 plant species and 5 wildlife species. If a project has a federal nexus, consultation with the USFWS is required prior to impacting critical habitat.

A total of 136 special-status species have been documented in the Mountain Region, including 18 plant species and 11 wildlife species that are federally or state listed as endangered or threatened, 4 wildlife species that are state fully protected, and one wildlife species that is a state candidate for listing. Development areas should be reviewed for the potential to support a special-status species and impacts to special-status species should be avoided and minimized to the maximum extent practicable. State and federally listed species and fully protected species are provided in Table 7.