December 13, 2016

Mike Higgins, AIA, Project Architect
DKC Architects, Inc.
1461 Ford Street, Suite 103
Redlands, CA 92373

Subject: **Biological Resources Assessment Report for High Trails Outdoor Science School, San Bernardino County, California**

Dear Mr. Higgins:

Borcher Environmental Management (BEM) is pleased to provide this general biological survey and Biological Resources Assessment Report for the High Trails Outdoor Science School Project (Project) located near Seven Oaks, San Bernardino Mountains, California (Exhibit 1). The property (Assessor's Parcel Number 305-241-14-000) is currently primarily undeveloped, and is being considered for development of an outdoor science school. The development is planned to occur in two phases. Phase 1 will include a dining hall, care takers residence, six adult sleeping cabins and six youth sleeping cabins. Phase 2 will include a care takers residence, two adult sleeping cabins, and three youth sleeping cabins. The proposed development would include a main lodge, seven separate housing buildings, and a parking lot along with other paved surfaces. The parking lot and other roads/trails on site are proposed to be constructed of pervious material such as Class II base material.

Access to the property would be achieved by construction of new paved roads from Radford Camp Road to the south. This report summarizes the biological resources present within the property boundaries (survey area) and the potential for the proposed project to impact sensitive biological resources.

Survey Methods

Literature Review

A literature review was conducted prior to the field reconnaissance survey in order to identify sensitive biological resources known within the Project vicinity. The literature review included the following research:

- Existing documentation and studies of the biological resources within the immediate vicinity of the site
- The Federal Register listing package for each federally listed endangered or threatened species potentially occurring within the project site
- Literature pertaining to habitat requirements of special-status species potentially occurring on the site, including California Wildlife Habitat Relationships
- The California Department of Fish and Wildlife (CDFW) Annual Report on the status of California's listed threatened and endangered plants and animal
- California Natural Diversity Database (CNDDB, Big Bear Lake and Moonridge Quadrangles) and California Native Plant Society Electronic Inventory (CNPSEI) information regarding special-status species potentially occurring on the site

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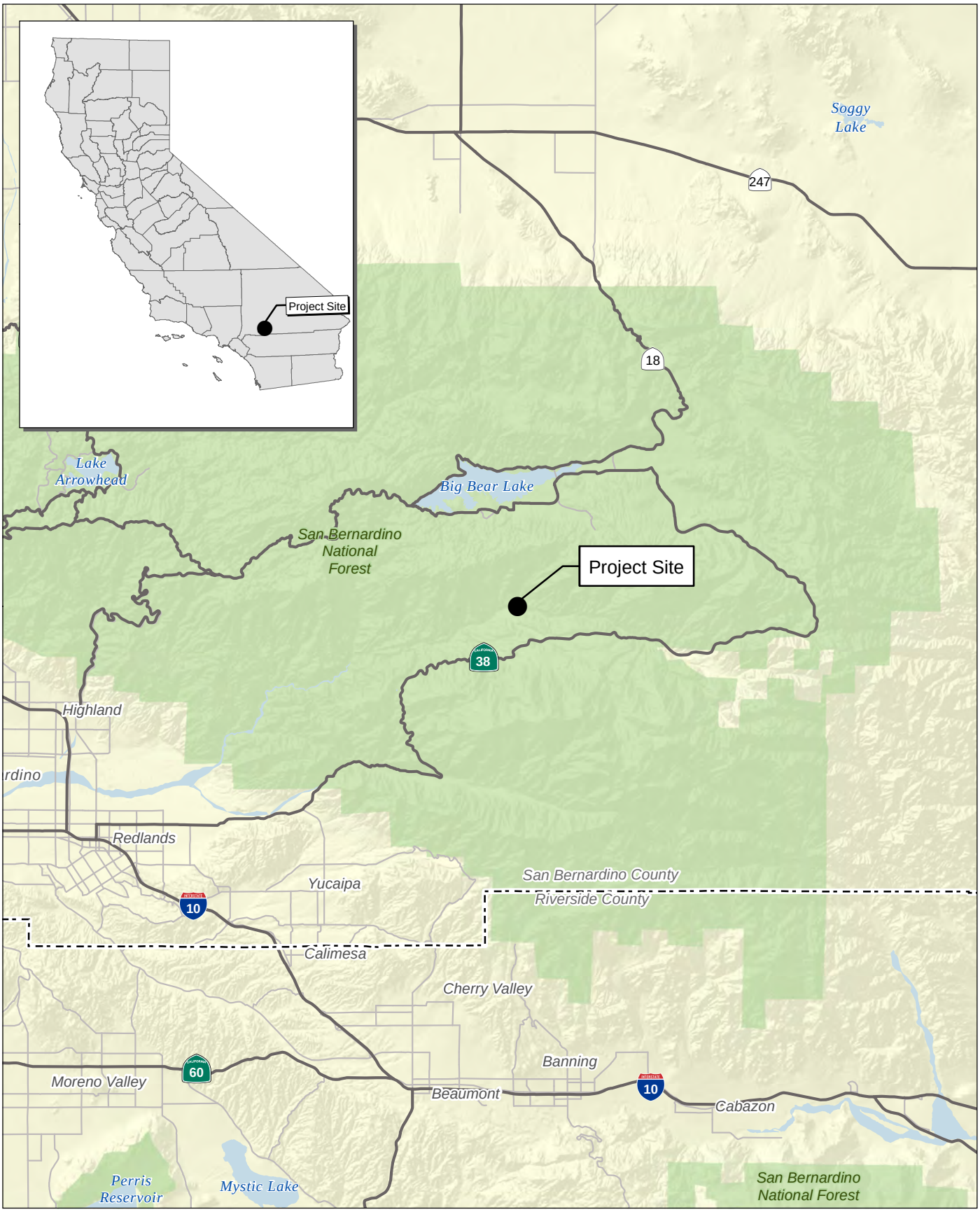

Source: Census 2000 Data, The CaSIL, FCS GIS 2016.

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Exhibit 1
Regional Location Map

- The United States Fish and Wildlife (USFWS) Species Occurrence Data
- United States Geological Service topographic maps and current aerial photos were reviewed for evidence of United States Army Corps of Engineers (USACE) or CDFW jurisdictional areas pursuant to Section 404 of the Clean Water Act and Section 1602 of the California Fish and Game Code.

Reconnaissance Field Survey

BEM biologist Andrew Borcher conducted a generalized reconnaissance survey of the project site on September 14, 2016 between 0800 and 1400. Conditions during the survey consisted of clear skies, temperatures between approximately 43 and 70 degrees Fahrenheit, and winds from zero to 4 miles per hour. The survey was conducted on foot by walking meandering transects within and around the project site and recording all vegetation communities, plants, and wildlife species observed. Wildlife species detected during the reconnaissance-level survey by sight, sound, or other signs were recorded. The surveyor assessed for the potential of special-status species to occur within the project site.

Although the entire project site was surveyed, some sensitive resources may not have been detected because of the short duration and seasonal timing of the survey period. Potentially occurring rare annual plants may not have been identifiable and any wildlife species that are not diurnal (nocturnal, fossorial, etc.), secretive in their habits, or that utilize the site only periodically may not have been detected during the survey.

In addition to the assessment of plants and wildlife, the project site was assessed for wetlands and potentially jurisdictional waters regulated by state and federal agencies. The surveyor is also a professional jurisdictional delineator with over 15 years of experience performing wetland and waters determinations and preparing permit applications. The surveyor made a jurisdictional assessment based on professional experience for each water conveyance feature located within the project site. A full wetland delineation was not performed and will be required if wetland and waters are proposed to be impacted.

Wildlife Movement Corridor

Wildlife movement corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of natural vegetation communities can lead to the isolation of wildlife habitat, separating different populations of a single species. Corridors link these populations. The project site was evaluated for evidence of a wildlife movement corridor. The focus of the wildlife corridor assessment was to determine if the proposed project will have significant impacts on the regional movement of wildlife.

Regulatory Setting

Potential impacts to biological resources on the project site were analyzed based upon the environmental policies and regulations including the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), Migratory Bird Treaty Act (MBTA), federal Endangered Species

Act (ESA), California Endangered Species Act (CESA), Clean Water Act (CWA), Biotic Resources Overlay Map, Development Code (Chapter 82.11 and Chapter 88.01), and the General Plan, Section V Conservation. These regulations are enforced by federal and state agencies such as the USFWS, USACE, CDFW, and the County of San Bernardino.

Migratory Bird Treaty Act

The MBTA is a federal law that prohibits take of nearly all bird species native to the United States. There are a number of species (native or non-native) that belong to families not referred to in any of the four treaties underlying the MBTA (USFWS 2010) and are added as three groups: (1) nonnative species introduced into the United States or its territories by means of intentional or unintentional human assistance that belong to families or groups covered by the Canadian, Mexican, or Russian Conventions; (2) nonnative human-introduced species that belong to families or groups not covered by the Canadian, Mexican, or Russian Conventions; (3) native species that belong to families or groups represented in the United States, but which are not expressly mentioned by the Canadian, Mexican, or Russian Conventions. An exhaustive list of the species covered by the MBTA has been published (USFWS 2010) and includes nonnative swans, ducks, geese, and pigeons.

U.S. Army Corps of Engineers Waters

Section 404 of the CWA gives the United States Environmental Protection Agency (EPA) and the USACE regulatory and permitting authority regarding discharge of dredged or fill material into "waters of the United States." The term "waters of the United States" is defined by 33 Code of Federal Regulations (CFR) Part 328. In 2015, the USACE finalized the Clean Water Rule to clarify the definition of "waters of the United States" to be:

- Waters used for commerce;
- Interstate waters and wetlands;
- "Other waters" such as intrastate lakes, rivers, streams, and wetlands;
- Impoundments of waters ;
- Tributaries, containing a bed and bank, and an "ordinary high water mark", to the above waters;
- Territorial seas;
- Wetlands and riparian areas adjacent to waters; and
- Lakes and ponds located in the riparian zone or floodplain of waters.

In December 2008, in response to the Supreme Court's decision in the combined cases of *Rapanos v. U.S.* and *Carabell v. U.S.* (126 S. Ct. 2208; 2006), the EPA and USACE issued final guidance on the scope of regulatory jurisdiction under the CWA, including Section 404 (EPA and USACE 2007). The guidance specifies that EPA and USACE will assert jurisdiction over the following waters:

- **Traditional Navigable Waters (TNWs).** TNWs are all waters subject to the ebb and flow of the tides, and waters that are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 CFR 328.3(a)(1)).

- **Wetlands adjacent to TNWs.** Wetlands are defined as cited above (see also Methodology below). The term "adjacent" means bordering, contiguous, or neighboring, meeting one of the following criteria: 1) there is an unbroken surface or shallow sub-surface connection to the TNW; 2) the wetland is physically separated from the TNW artificially by a human-made dike, or by natural barrier such as a berm or dune; or 3) the wetland is reasonably close to the TNW, such that direct ecological interconnections are present (40 CFR Part 230).
- **Non-navigable, but relatively permanent waters (RPWs) that are tributaries to TNWs.** These are waters that typically flow year-round or continuously for at least 3 months. The boundaries of such waters are determined by the limits of ordinary high water (33 CFR part 328.3).
- **Wetlands adjacent to RPWs.** The guidance stipulates that a continuous surface connection must be present between the wetland and RPW. If such connection is not present, additional criteria must be satisfied (see next bullet).
- **Non-RPWs and adjacent wetlands with a significant nexus to TNWs.** To establish (or rule out) a significant nexus requires an assessment of the flow characteristics and functions of the tributary and any adjacent wetland to determine if they significantly affect the chemical, physical, and biological integrity of downstream navigable waters.

Previous guidance states that swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent or short-duration flow) and ditches excavated in uplands are generally not jurisdictional because they are not tributaries or do not have a significant nexus to downstream TNWs. The same reasoning would indicate that isolated bodies of water and isolated wetlands without a demonstrated relationship to interstate commerce would generally not be considered jurisdictional. The Supreme Court ruling in *SWANCC v. U.S.* (121 S. Ct. 751; 2001) indicated that the movement of migratory birds to/from an isolated body of water was not sufficient evidence of interstate commerce. The recent Clean Water Rule includes a list of features that are not jurisdictional, including erosional features, upland ditches, rills, and non-wetland swales.

United States Army Corps of Engineers Wetlands

Wetlands are defined by 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions." In 1987, the USACE published a manual to guide its field personnel in determining jurisdictional wetland boundaries. This manual was amended in 2008 by the USACE 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Currently, the 1987 Wetland Manual and the 2008 Arid West Supplement provide the legally accepted methodology for identification and delineation of USACE-jurisdictional wetlands in southern California.

The methodology set forth in the 1987 Wetland Manual and updated by the Arid West Supplement generally requires that, in order to be considered a wetland, the vegetation, soils, and hydrology of an

area must exhibit at least minimal hydric characteristics. Wetlands are determined by and delineated using three parameters: hydrophytic vegetation, wetland hydrology, and hydric soils.

California Department of Fish and Wildlife

Under sections 1600–1607 of the Fish and Game Code, CDFW regulates all activities that would divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife.

CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." CDFW's definition of "lake" includes "natural lakes or man-made reservoirs." CDFW limits of jurisdiction include the outer edge of riparian vegetation drip line or at the top of the uppermost bank-to-bank distance, whichever is wider.

Regional Water Quality Control Board

The State of California (State) regulates discharge of material into waters of the State pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act (California Water Code, Division 7, §13000, et seq.). State waters are all waters that meet one of three criteria—hydrology, hydric soils, or wetland vegetation—and generally include all waters under the jurisdiction of USACE and CDFW.

Discharges require a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permit program controls water pollution by regulating sources of pollutants into waters of the United States. A permit for San Bernardino County has been issued through the State of California through the Santa Ana Regional Water Quality Control Board. The San Bernardino County Flood Control District has been designated "Principal Permittee" under the MS4 permit, and administers and coordinates many of the permit requirements on behalf of all permittees.

San Bernardino County

The property occurs within the Biotic Resources Overlay Zone of San Bernardino County. The Overlay Zone is established by Sections 82.01.020 (Land Use Plan and Land Use Zoning Districts) and 82.01.030 (Overlays) implements General Plan policies regarding protection and conservation of beneficial rare and endangered plants and animal resources and their habitats, which have been identified within unincorporated areas of the county. When proposing development within the Biotic Resources Overlay Zone, the project proponent must prepare a biotic resources report that identifies all biotic resources located on the site and those on adjacent parcels that could be impacted by the project. The report must also include mitigation measures designed to reduce or eliminate impacts to identified resources. This Biological Resources Assessment Report has been prepared to meet those requirements.

Survey Results

Environmental Setting

The approximately 40-acre project site is located near the community of Seven Oaks and Barton Flats in the San Bernardino National Forest north of State Route 38 (SR-38), on the western slopes of Sugar Loaf Mountain (Exhibit 2). Elevation on-site ranges from 5,520 feet above mean sea level (AMSL) in the northwest corner to 5,322 AMSL in the Santa Ana River in the southwest corner. The project site contains several small hills and generally slopes moderately from north to south. The parcel is traversed by Radford Camp Road that winds north to south on the western half. The property is undeveloped, supporting natural vegetation with the exception of an expansion tank for a private water well located on a small concrete pad in the center of the site. A dirt access road and gate on the eastern edge of the site occur as well (Attachment A: Site Photographs). The upper Santa Ana River occurs within the southwest corner and to the south of the property. The project site is nearly completely bound by undeveloped land owned by the United States Forest Service (USFS) with the exception of undeveloped private land to the northwest.

Soils on the project site are limited to Oak-glen rush families complex (2 to 15% slopes) and Wapi-Pacifico families (50 to 75% slopes) (Bowman 1973) (Exhibit 3). Soils from the Oak-glen complex are alluvial and well-drained. Soils from the Wapi-Pacifico complex are found on mountain slopes and are also somewhat excessively drained. Both soils are mostly made up of mixed coarse loam and sand.

Vegetation Communities

The project site contains four different land cover types including mixed oak/coniferous forest, big sagebrush scrub, white alder riparian forest and developed lands (Exhibit 4 and Attachment A). Each land cover type is discussed in more detail below. A complete list of plants observed during the site visit is provided as Table 1.

Mixed Oak/Coniferous Forest

Mixed Oak/Coniferous Forest is a community with a diversity of oak and conifer species. The dominant tree species found within the project site included yellow pine (*Pinus ponderosa*), black oak (*Quercus kelloggii*), interior live oak (*Quercus wislizeni*), canyon live oak (*Quercus chrysolepis*), and Coulter pine (*Pinus coulteri*). Tree cover was mostly open with some dense patches of oaks. The trees varied in height, but the maximum heights for oaks were generally 30 feet and for pines were generally 50 feet. The understory of this habitat type was dominated by big sagebrush scrub. Approximately 28.0 acres of mixed oak/coniferous forest occur within the project site.

Big Sagebrush Scrub

Big Sagebrush Scrub is characterized by mostly soft-woody shrubs, 0.5 to 2.0 meters tall, that is dominated by big sagebrush (*Artemisia tridentata*). Dominant species found within this habitat included big sagebrush, rubber rabbitbrush (*Ericamaria nauseosa*), tarragon (*Artemisia dracunculus*), shiny-leaf

yerba santa (*Eriodictyon trichocalyx*), and cheat grass (*Bromus tectorum*). Other species found scattered within this habitat included manzanita (*Arctostaphylus glandulosa*), wild rye (*Elymus* spp.), and chaparral whitethorn (*Ceanothus leucodermis*). This habitat was found between tree openings and within the understory of the mixed oak/coniferous forest. Approximately 10.62 acres of big sagebrush scrub was observed on the eastern half of the project site, where it and continued to the adjacent properties to the east, south, and west.

White Alder Riparian Forest

White Alder Riparian Forest is characterized by medium-tall broadleaf deciduous forests dominated by white alder (*Alnus rhombifolia*), with a shrubby, deciduous understory. It is generally associated with rapidly flowing, well-aerated perennial streams. This habitat is found within the southwest corner of the project site where Santa Ana River flows through. Dominant species observed included white alder, with arroyo willow (*Salix lasiolepis*), poison oak (*Toxicodendron diversilobum*) and stinging nettle (*Urtica dioica*) co-occurring. Approximately 0.31 acre of white alder riparian forest occurs within the project site.

Developed Lands

Developed Lands refers to any built areas that are maintained and are not vegetated. This is limited to the paved Redford Camp Road, and the small concrete pad with tank within the project area. Approximately 1.81 acre of developed areas occurs within the project site.

General Wildlife Observations

Wildlife species observed during the general survey included bushtit (*Psaltriparus minimus*), pygmy nuthatch (*Sitta pygmaea*), northern flicker (*Colaptes auratus*), acorn woodpecker (*Melanerpes formicivorus*), California scrub jay (*Aphelocoma californica*), Wilson's warbler (*Cardellina pusilla*), woodrat (*Neotoma* sp.), chipmunk (*Tamias* sp.), Behr's metalmark butterfly (*Apodemia virgulti*), and red admiral butterfly (*Vanessa atalanta*). These species are common to the area and found in mixed conifer, sagebrush, and riparian habitats.

Plant Observations

All plants identified during the reconnaissance survey are shown in Table 1. Many plant species, including annuals that were not currently in bloom, were not identifiable during the time of the survey. Unidentifiable plants encountered during the survey have the potential to be special-status species if appropriate microhabitat conditions exist. A focused survey during the blooming period for the special-status plant species listed below is recommended to determine whether any of these species occurs on the site. The survey should be conducted by a qualified botanist.

Table 1: Plants Observed during Survey

Scientific Name	Common Name	Special Status
Alnus Rhombiflora	white alder	—
Arctostaphylos glandulosa	manzanita	—
Artemisia douglasiana	California mugwort	—
Artemisia dracunculus	taragon	—
Artemisia tridentate	big sagebrush	—
Asclepias californica	California milkweed	—
Astragalus sp.	milkvetch	Potentially special-status**
Brickellia californica	California bricklebush	—
*Bromus rubens**	red brome*	—
*Bromus tectorum**	cheat grass*	—
Calocedrus decurrens	California incense cedar	—
Ceanothus leucodermis	chaparral whitethorn	—
Cirsium sp.	thistle	—
Elymus sp.	rye grass	—
Emmenanthe penduliflora	whispering bells	—
Epilobium sp.	fuschia	—
Ericameria nauseosa	rubber rabbitbrush	—
Eriodictyon trichocalyx	shiny-leaf yerba mansa	—
Eriogonum fasciculatum	California buckwheat	—
Eriogonum gracile	slender buckwheat	—
Eriogonum kennedyi var. *kennedyi*	Kennedy's wild buckwheat	—
Eriogonum parishii	Parish buckwheat	—
Erysimum sp.	wallflower	—
Fangula californica	California coffee berry	—
Galium angustifolium	narrow-leaf bedstraw	—
Gnaphalium Leucodermis	California everlasting	—
Lessingia filanifolia	California aster	—
Leymus condensatus	giant wild rye	—
Lonicera subspicata	California honeysuckle	—
Mirabilis sp.	wishbone	—

Table 1 (cont.): Plants Observed during Survey

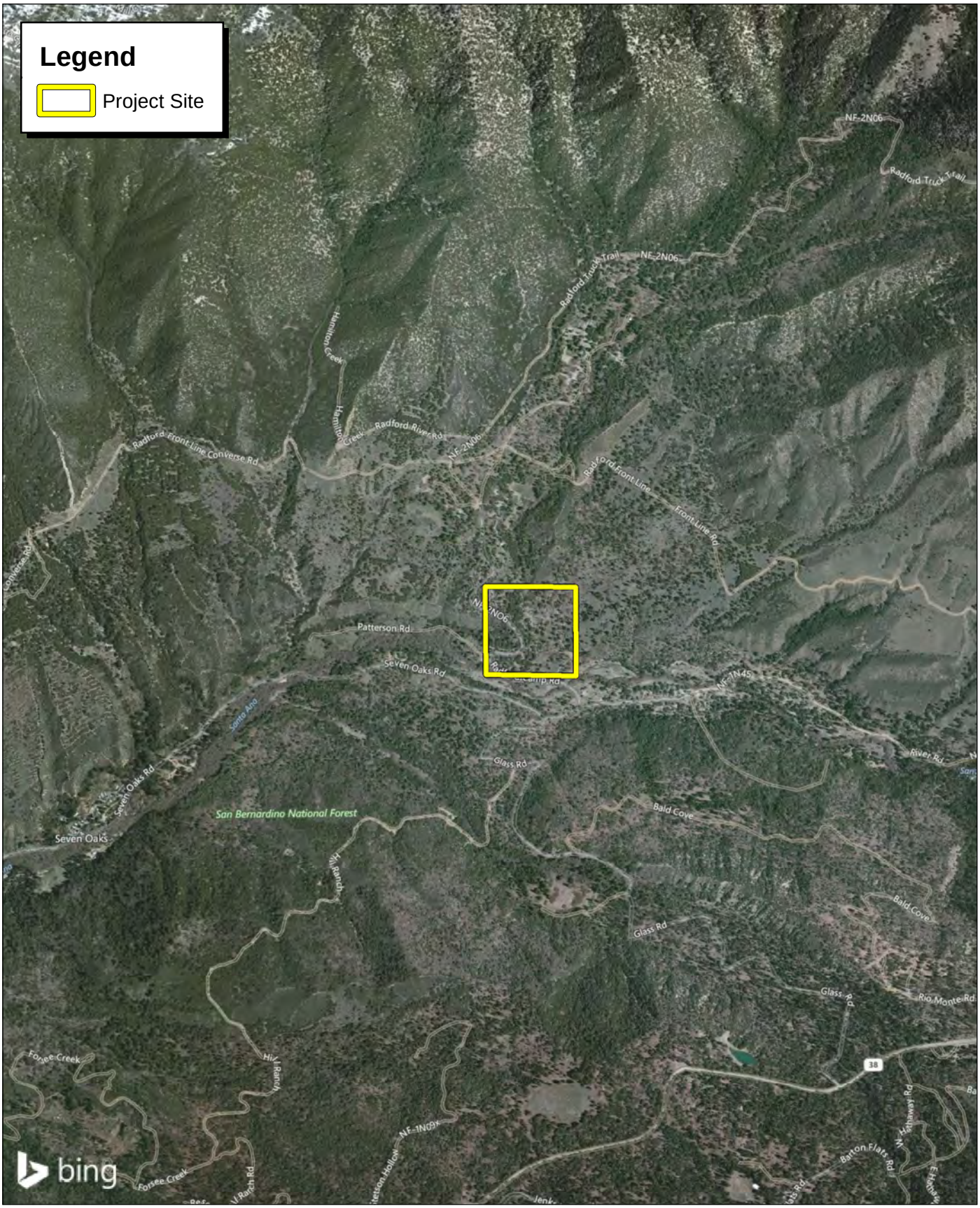
Scientific Name	Common Name	Special Status
Opuntia sp.	prickly pear	—
Pinus coulteri	Coulter pine	—
Pinus jeffreyi	Jeffrey pine	—
Pinus lambertiana	sugar pine	—
Prosopis glandulosa	honey mesquite	—
Quercus berberidifolia	scrub oak	—
Quercus chrysolepis	canyon live oak	—
Quercus kelloggii	California black oak	—
Quercus wislizeni	interior live oak	—
Rhus trilobata	skunkbush	—
Ribes sp.	currant	—
Salix lasiolepis	arroyo willow	—
Sambucus nigra	blue elderberry	—
Stephanomeria exigua	small wreath-plant	—
Stipa millicae	smilo grass	—
Toxicodendron diversilobum	poison oak	—
Urtica dioica	stinging nettle	—
Notes: * = Non-native species; ** = Unable to identify without flowers, requires follow-up survey		

Special-status Wildlife and Plant Species

Special-status biological resources are those defined as follows: (1) species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or threatened population sizes; (2) species and habitat types recognized by local and regional resource agencies as sensitive; (3) habitat areas or plant communities that are unique, are of relatively limited distribution, or are of particular value to wildlife; and (4) wildlife corridors and habitat linkages.

Wildlife

Twenty-four special-status wildlife species were identified by the CNDDB search as potentially occurring within 5 miles the Project vicinity. No special-status species were detected during the survey; however, several state and federally listed species have the potential to occur within the project site.



Source: Bing Imagery, 2015

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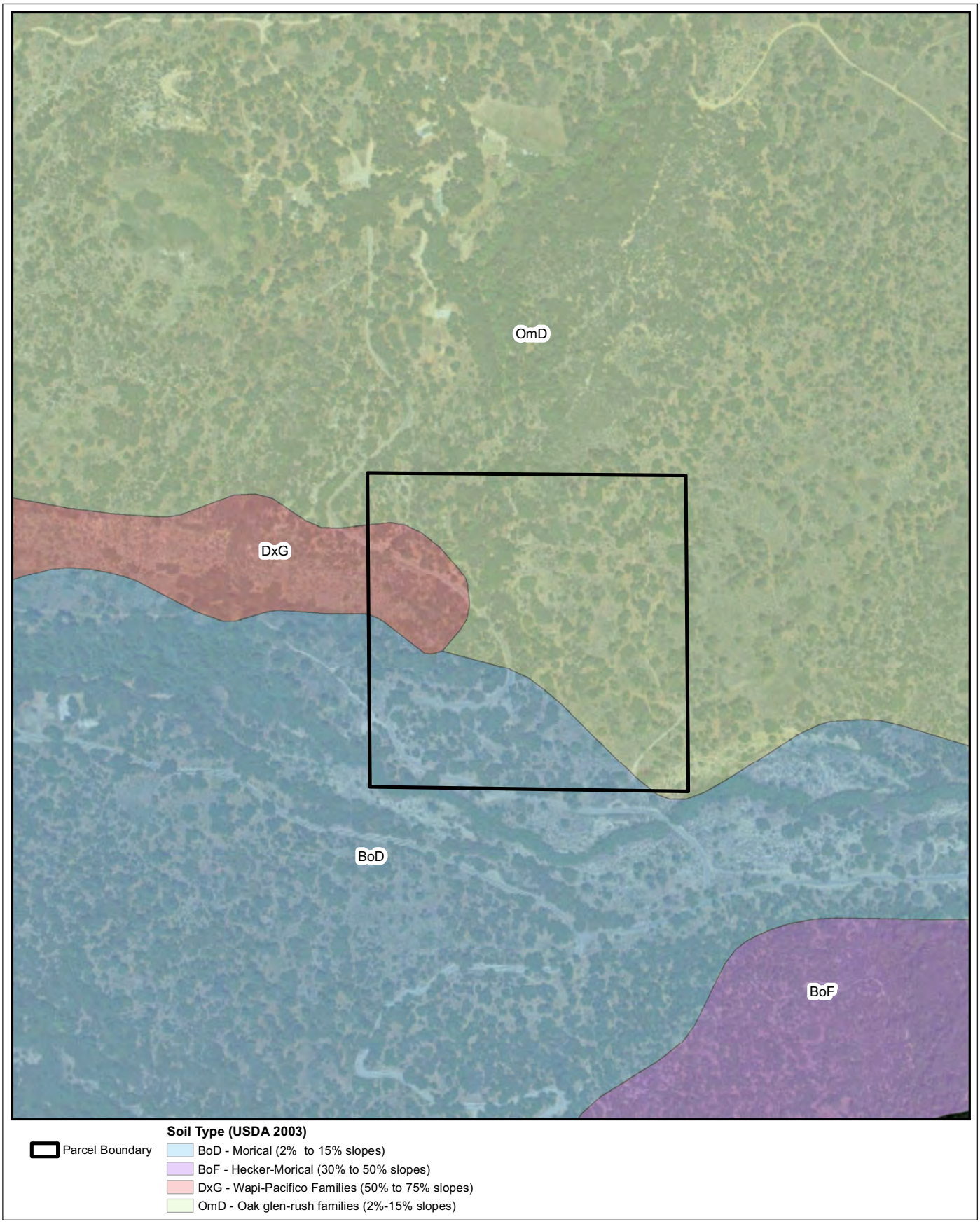
Exhibit 2
Local Vicinity Map
Aerial Base



Source: Borcher Environmental Management, 2016

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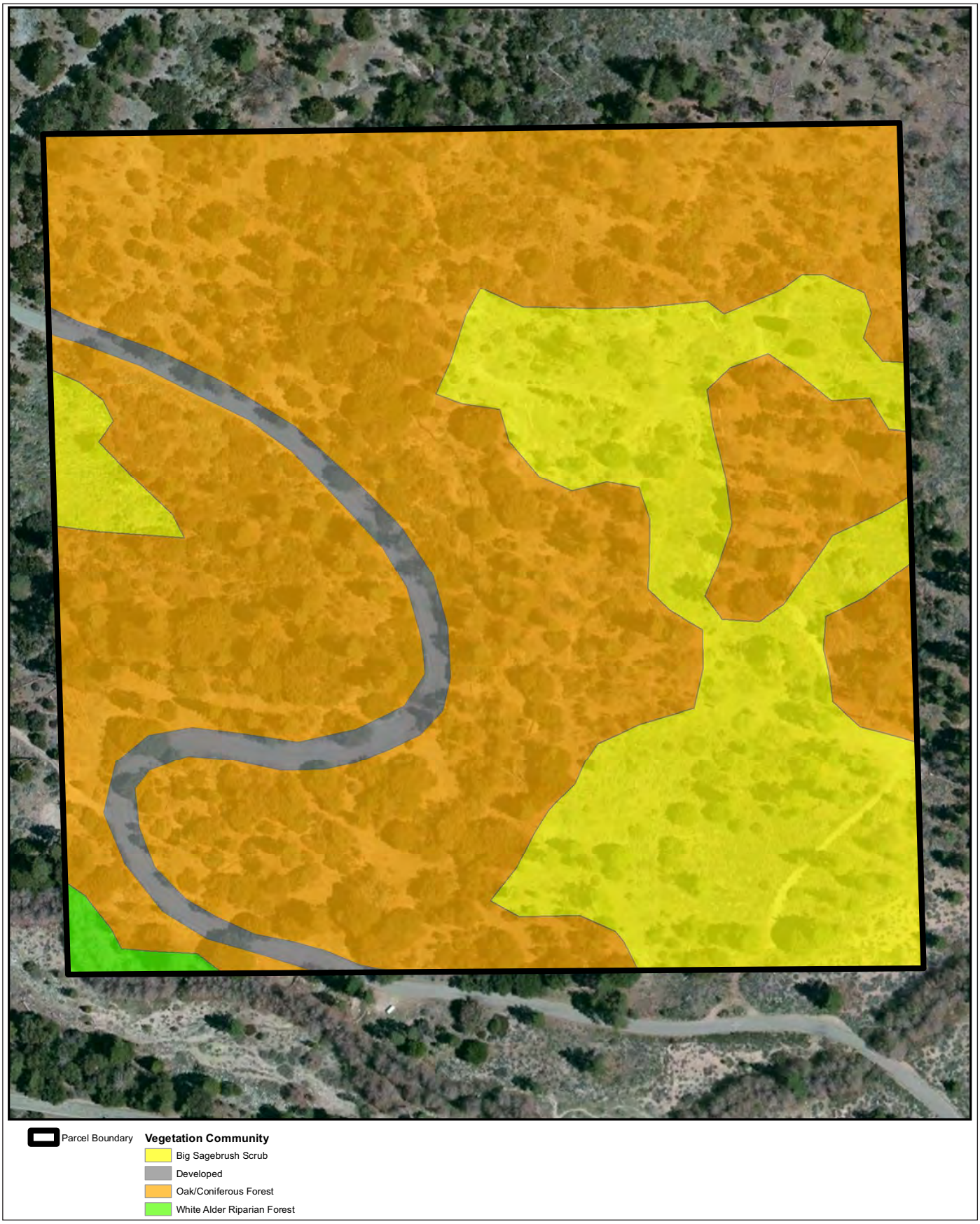
Exhibit 3
Soils Composition



Source: Borcher Environmental Management, 2016

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Exhibit 4
Vegetation Communities

Several special-status species have the potential to occur including the federally and/or state listed southwestern willow flycatcher (*Empidonax traillii extimus*), southern rubber boa (*Charina umbratica*), and mountain yellow-legged frog (*Rana muscosa*). Additionally, the San Bernardino northern flying squirrel (*Glaucomys sabrinus californicus*), a CDFW Species of Special Concern (SSC), has potential to occur within the project site. Although these species may occur, their habitat requirements are very specific and focused surveys during the appropriate survey period would need to be conducted if their habitats were to be potentially adversely affected by the project.

California SSC do not have legal protection under ESA or CESA but are recognized as sensitive by CDFW; therefore, require an independent assessment under the CEQA process to determine if project related impacts are significant. The following is a list of each species of concern that is considered to have a moderate to high potential to occur on-site. The habitat utilized by each of these species and their potential to occur on the project site is included in Table 2 below.

Additionally, these California SSC have potential to occur that include: silvery legless lizard (*Anniella pulchra pulchra*), coastal rosy boa (*Charnia trivirgata*), San Bernardino ringneck snake (*Diadophis puncttatus modestus*), large-blotched ensatina (*Ensatina eschscholtzii klauberi*), California mountain kingsnake (*Lampropeltis zonata*), coast horned lizard (*Phrynosoma blainvillii*), two-striped garter snake (*Thamnophis hammondii*), Cooper's hawk (*Accipiter cooperii*), yellow warbler (*Dendroica petechia brewsteri*), long-eared owl (*Asio otus*), yellow-breasted chat (*Ictera virens*), loggerhead shrike (*Lanius ludovicianus*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and lodgepole chipmunk (*Tamias speciosus*). Although these species may occur, the potential adverse impacts to these species is dependent on the extent of development adversely affecting known occupied habitat and the effects that has on the local population.

For a complete list of special-status wildlife that occur within the project vicinity and their potential to occur on the project site please see Table 2 below.

Table 2: Special Status Wildlife Species Occurrence Potential

Common Name (*Scientific Name*)	Status	Habitat	Potential for Occurrence
Birds			
Cooper's hawk (*Accipiter cooperii*)	SSC	Mixed deciduous forests and open woodlands	Although not observed, potential to occur due to suitable nesting and foraging habitat present throughout site.
long-eared owl (*Asio otus*)	SSC	Deciduous and coniferous forests adjacent to grasslands	Although not observed, potential to occur due to suitable nesting and foraging habitat present on the site.
golden eagle (*Aquila chrysaetos*)	SSC, BEPA	Uncommon resident forages over grassland and broken chaparral or sage scrub	Not observed and low foraging potential and no suitable nesting habitat present.
yellow warbler (*Dendroica petechia brewsteri*)	SSC	Dense shrubs near marshes and water courses	Although not observed, potential to occur due to suitable nesting and foraging riparian habitat associated with the Santa Ana River within and adjacent to the project site.
Southwestern willow flycatcher (*Empidonax trailii extimus*)	FE, SE	Dense riparian and shrub communities associated with rivers and other wetlands.	Although not observed, potential to occur due to suitable nesting and foraging riparian habitat associated with the Santa Ana River within and adjacent to the project site. Historical observations located approximately 0.5 mile south near Barton Creek. Additionally, the Santa Ana River's flood plain, included within the riparian habitat, is designated as USFWS Critical Habitat. Focused surveys will likely be required to determine presence/absence.
yellow-breasted chat (*Ictera virens*)	SSC	Dense thickets and brush	Although not observed, potential to occur due to suitable nesting and foraging riparian habitat associated with the Santa Ana River within and adjacent to the project site.

Table 2 (cont.): Special Status Wildlife Species Occurrence Potential

Common Name (*Scientific Name*)	Status	Habitat	Potential for Occurrence
loggerhead shrike (*Lanius ludovicianus*)	SSC	Grasslands, orchards, open areas with scattered trees, deserts.	Although not observed, potential to occur due to adequate nesting and foraging habitat present throughout site.
California spotted owl (*strix occidentalis occidentalis*)	SSC, FSS	Closed canopy mature forests	Not expected to occur within the project site due to lack of mature dense closed canopy habitat.
Reptiles and Amphibians			
silvery legless lizard (*Anniella pulchra pulchra*)	SSC	Moist sandy loams near sparse vegetation	Although not observed, potential to occur within the project site.
coastal rosy boa (*Charina trivirgata*)	FSC, FSS	Chaparral and scrub habitats up to 6700 feet	Although not observed, potential to occur within the project site.
Southern rubber boa (*Charina umbratica*)	ST, FSS	Oak and conifer forests at elevations between 5000 to 8200 feet	Although not observed, potential to occur throughout site. Shelter available under rocks, logs and leaf litter. Historical observations occur adjacent to site. Focused surveys/ trapping will likely be required to determine presence/absence.
San Bernardino ringneck snake (*Diadophis punctatus modestus*)	FSC, FSS	Wide variety of habitats near streams up to 6400 feet. More associated with elevations below 3000 feet.	Not observed, low potential to occur.
large-blotched Ensatina Salamander (*Ensatina eschololtzii klauberi)*	FSS	Open woodlands dominated oak, pine and fir species	Not observed, potential to occur.
California mountain kingsnake (*Lampropeltis zonata*)	SSC	Chaparral, lower montane coniferous forest.	Not observed, potential to occur.
coast horned lizard (*Phrynosoma blainvillii*)	SSC, FSS	Open sandy areas with low vegetation	Not observed, potential to occur. Historical observations within 3 miles.

Table 2 (cont.): Special Status Wildlife Species Occurrence Potential

Common Name (*Scientific Name*)	Status	Habitat	Potential for Occurrence
mountain yellow-legged frog (*Rana muscosa*)	FE, SE	Mountain creeks, lakes, streams, and pools. Tadpoles require a permanent water habitat for at least two years while they develop.	Not observed, moderate potential to occur due to perennial mountain creek on-site (Santa Ana River). Critical habitat and historic observation approximately 1.3 miles southeast in a tributary (Barton Creek) to the Santa Ana River. Focused surveys will likely be required to determine presence/absence.
Two-striped garter snake (*Thamnophis hammondii*)	SSC, FSS	Along streams bordered by riparian growth.	Not observed, moderate potential to occur.
Mammals			
pallid bat (*Antrozous pallidus*)	SSC	Found throughout California in forested regions and brushy areas; roosts in buildings, trees, and crevices in cliffs.	Not observed, low potential to occur due to lack of suitable night roost habitat within the project site and low quality day/maternity roost bridge location south of the project site.
Townsend's big-eared bat (*Corynorhinus townsendii*)	FSC, SSC, FSS	Humid coastal regions of northern and central California; roosts in mines, caves, and old buildings; utilizes a variety of habitats including oak woodlands, arid grasslands, and deserts.	Not observed, low potential to occur due to lack of suitable night roost habitat within the project site and low quality day/maternity roost bridge location south of the project site.
greater western mastiff bat (*Eumops perotis californicus*)	FSC, SSC	Central California to central Mexico; rocky areas within open shrub/grassland and cultivated fields, as well as chaparral and chaparral/oak interfaces.	Not observed, not likely to roost on-site due to lack of suitable habitat.
San Bernardino northern flying squirrel (*Glaucomys sabrinus californicus*)	SSC, FSS	Coniferous forests and mixed coniferous forests from 5000 to 8000 feet	Not observed, moderate potential to occur. Historical observations within 3 miles. Focused surveys/trapping will likely be required to determine presence/absence.
pocketed free-tailed bat (*Nyctinomops femorosaccus*)	SSC	Rocky areas with relatively high cliffs, usually using rock crevices for day-roosts	Not observed, not likely to roost on-site due to lack of suitable habitat.

Table 2 (cont.): Special Status Wildlife Species Occurrence Potential

Common Name (*Scientific Name*)	Status	Habitat	Potential for Occurrence
lodgepole chipmunk (*Tamias speciosus*)	SSC	Open-canopy forests of mixed conifer, Jeffry pine, lodgepole and limber pine, and occasionally in chaparral.	A chipmunk was observed briefly during the field visit, but the surveyor was unable to identify before it retreated into a tree cavity. Lodgepole chipmunks are known to occur in the vicinity and the habitat within the project site is suitable. Other common species of chipmunk also have potential. Although follow-up surveys may not be appropriate, further observations during unrelated surveys will likely identify any species on-site.
Fish			
Unarmored three-spined stickleback (*Gasterosteus aculeatus williamsoni*)	FE, SE	Permanent water such as lakes, ponds, ditches and rivers	Not observed, low potential to occur. Not known to occur in the Santa Ana River. Appropriate breeding habitat does not exist on the project site. The section of the Santa Ana River on-site is a relatively narrow rocky stream channel with fast-moving water with very little areas for fish shelter. Some portions up and downstream of the project site may be appropriate.

Code Designations	
FE= Federally Endangered **FC**= Federal Candidate for listing **FT** = Federally Threatened **FSC**= Federal Species of Concern **FPE** = Federally proposed for listing as Endangered	**SE** = State Endangered **SSC** = California Species of Special Concern **FSS** = Forest Service Sensitive Species **CFP** = California Fully Protected **BEPA** = Bald and Golden Eagle Protection Act

Plants

Thirty-two special-status plant species were identified by the CNDDB search as potentially occurring within the project vicinity. No special-status species were detected during the survey; however, several species, including federally listed, have the potential to occur within the project site. For a complete list of special-status wildlife that occur within the project vicinity and their potential to occur on the project site, please see Table 3 below. Exhibit 5 shows several sensitive plant species within 2.5 miles of the project site.

Table 3: Special Status Plant Species Occurrence Potential

Common/Scientific Name	Status	Habitat	Occurrence/Occurrence Potential
cushberry milk-vetch (*Astragulus albens*)	FE, CRPR 1B	Carbonate soils with scrub and dwarf woodland with open canopies	Not observed, not expected occur due to a lack of carbonate soils on-site.
San Bernardino milk-vetch (*Astragalus bernardinus*)	CRPR 1B	Stony washes, pinyon and juniper woodlands	An unidentified milk-vetch species was observed in the southeast corner of the project site. Follow-up surveys during the flowering season are required to determine San Bernardino milk-vetch presence/absence. Historical observations are within 1 mile of the project site.
Big Bear Valley milk-vetch (*Astragalus lentiginosus* var. *sierra*)	CRPR 1B	Sagebrush scrub	An unidentified milk-vetch species was observed in the southeast corner of the project site. Historical observations within 0.5 mile of project site. Follow-up surveys during the flowering season are required to determine Big Bear Valley milk-vetch presence/absence. Historical observations within 1 mile of the project site.
Big Bear Valley woollypod (*Astragalus leucolobus*)	CRPR 1B	Gravelly or rocky desert scrub, meadows, pinyon and juniper woodland, upper montane coniferous forest	An unidentified milk-vetch species was observed in the southeast corner of the project site. Historical observations within 1 mile of project site. Follow-up surveys during the flowering season are required to determine Big Bear Valley woollypod presence/absence. Historical observations within 1 mile of project site.
pinyon rockcress (*Boechera dispar*)	CRPR 2	Joshua tree woodland, desert scrub, pinyon and juniper woodlands	Not observed, not expected to occur due to a lack of suitable habitat.
Shockley's rockcress (*Boechera shockleyi*)	CRPR 2	Pinyon and juniper woodlands	Not observed, not expected to occur due to a lack of suitable habitat.

Table 3 (cont.): Special Status Plant Species Occurrence Potential

Common/Scientific Name	Status	Habitat	Occurrence/Occurrence Potential
Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*)	CRPR 1B	Meadows and moist habitats	Not observed, moderate potential to occur in riparian and other moist habitats on-site. Historical observation approximately 2 miles to the southwest in the Santa Ana River floodplain. Follow-up surveys during the flowering season are required to determine presence/absence.
Western sedge (*Carex occidentalis*)	CRPR 2	Lower montane coniferous forest, and meadows and seeps	Not observed, moderate potential to occur. Historic observations within 2 miles of project site. Follow-up surveys during the appropriate season required to determine presence/absence.
ash-gray paintbrush (*Castilleja cinerea*)	FT, CRPR 1B	Clay opening in desert scrub, pinyon-juniper woodland, and coniferous forests above 5900'	Not observed, not expected to occur based on lack of clay soils on-site.
San Bernardino Mt. owl's clover (*Castilleja lasioryncha*)	CRPR 1B.1	Meadows, yellow-pine forests	Not observed, not expected to occur due to a lack of suitable habitat.
San Bernardino Mts. dudleya (*Dudleya abramsii*)	CRPR 1B	Pebble plains, pavement habitat within pinyon and juniper woodlands, upper coniferous forests	Not observed, not expected to occur due to a lack of suitable habitat.
Big Bear Valley sandwort (*Eremogane ursina*)	FT, CRPR 1B	Pebble plains, pinyon and juniper woodland in moist, rocky areas	Not observed, not expected to occur due to a lack of suitable habitat.
Parish's daisy (*Erigeron parishii*)	FT, CRPR 1B	Desert scrub and pinyon woodland, sandy washes	Not observed, moderate potential to occur. Follow-up surveys during the appropriate season required to determine presence/absence.
Southern mountain buckwheat (*Eriogonum kennedyi*)	FT, CRPR 1B	Stony, sage-brush covered pebble plains	Not observed, not expected to occur due to a lack of suitable habitat.
Cushenbury ovalifolium (*Eriogonum ovalifolium* var. *vineum*)	FE, CRPR 1B	Carbonite soils, pinyon and juniper woodlands	Not observed, not expected to occur due to a lack of appropriate soils.

Table 3 (cont.): Special Status Plant Species Occurrence Potential

Common/Scientific Name	Status	Habitat	Occurrence/Occurrence Potential
San Bernardino Mtn. gilia (*Gilia leptantha* spp. *leptantha*)	CRPR 1B	Sandy or gravelly soils, open pine forests	Not observed, moderate potential to occur. Historical observation within 0.5 mile of project site. Follow-up surveys during the appropriate season required to determine presence/absence.
Parish's alumroot (*Houchera parishii*)	CRPR 1B	Montane coniferous forests	Not observed, moderate potential to occur. Historical observation within 0.5 mile of project site. Follow-up surveys during the appropriate season required to determine presence/absence.
Barton Flats horkelia (*Horkelia wilderae*)	CRPR 1B	Montane chaparral and woodlands	Not observed, moderate potential to occur. Historical observations approximately 2 miles to the east.
silver-haired ivesia (*Ivesia argyrocoma*)	CRPR 1B	Dry meadows, 6500-7500', pebble plains, montane coniferous forest	Not observed, not expected to occur due to a lack of suitable habitat.
short-separated lewisia (*Lewisia cotyledon*)	CRPR 1B	Rocky, lower montane forest	Not observed, not expected to occur due to a lack of suitable habitat.
lemon lily (*Lillium parryi*)	CRPR 1B	Meadows, streambanks and seeps within montane coniferous forests	Not observed, high potential to occur near Santa Ana River. Historic observations less than 0.5 mile to west. Follow-up surveys during the appropriate season required to determine presence/absence.
San Bernardino Mts. Monkey flower (*Mimulus exiguus*)	CRPR 1B	Moist rocky habitat, mountain meadows	Not observed, moderate potential to occur. Follow-up surveys during the appropriate season required to determine presence/absence.
San Bernardino ragwort (*Packera bernardino*)	CRPR 1B	Pebble plains, pine forests	Not observed, not expected to occur due to a lack of suitable habitat.
Parish's yampah (*Perideridia parishii*)	CRPR 2	Montane coniferous forest, meadows and seeps	Not observed, moderate potential to occur. Historical observations within 2.5 miles. Follow-up surveys during the appropriate season required to determine presence/absence.

Table 3 (cont.): Special Status Plant Species Occurrence Potential

Common/Scientific Name	Status	Habitat	Occurrence/Occurrence Potential
Big Bear Valley phlox (*Phlox dolichantha*)	CRPR 1B	Pebble plain in upper montane forest	Not observed, not expected occur due to a lack of suitable habitat.
San Bernardino bluegrass (*Poa atropurpurea*)	FE, CRPR 1B	Meadows and grassy, moist openings in pine forest	Not observed, low potential to occur. Follow-up surveys during the appropriate season required to determine presence/absence.
plantain goldenweed (*Pyrrocoma uniflora*)	FE, CRPR 1B	Forest, meadows with alkali soils	Not observed, not expected to occur due to a lack of suitable habitat.
Bear valley checkerbloom (*Sidalcea malviflora* ssp. *dolosa*)	CRPR 1B	Lower montane coniferous forest	Not observed, high potential to occur. Historic observations within 1 mile of project site.
bird-foot checkerbloom (*Sidalcea pedata*)	FE, SE, CRPR 1B	Pebble plains, meadows above 5250'	Not observed, not expected to occur due to a lack of suitable habitat.
San Bernardino aster (*Symphyotrichum defoliatum*)	CRPR 1B	Grassland and meadows	Not observed, low potential to occur. Follow-up surveys during the appropriate season required to determine presence/absence.
California dandelion (*Taraxacum californicum*)	FE, CRPR 1B	Wetlands, moist meadows	Not observed, moderate potential to occur within wetland associated with Santa Ana River. Historic observations less than 1.5 miles downstream. Follow-up surveys during the appropriate season required to determine presence/absence.
slender-petaled mustard (*Thelypodium stenopetalum*)	FE, SE, CRPR 1B	Wetlands, meadows and seeps, lake shores	Not observed, low potential to occur. Follow-up surveys during the appropriate season required to determine presence/absence.

Note:
CRPR = California Native Plant Society Rare Plant Rank (1B = Rare throughout their range, and 2 = rare in California but common beyond boundaries of California)

Jurisdictional Wetlands and Waters

The upper Santa Ana River occurs directly south of the project site including traversing the southwest and southeast corners (see Exhibit 6). The Santa Ana River was flowing steadily during the reconnaissance survey and is presumed to be a perennial mountain stream. The Santa Ana River supports mature white alder riparian forest with an understory of mostly hydrophytic plants within the project site. The vegetation adjacent to the river would likely be considered and regulated as a wetland. The creek's historic floodplain is very wide in some areas (>500 feet southeast of the project site) and is demarcated by a sandy substrate with steep banks at some of its widest points. The floodplain does not appear to flood often based on the presence of some mature upland shrubs. The floodplain would likely be considered jurisdictional by CDFW and RWQCB and permits would be required if it is proposed to be impacted.

The Santa Ana River begins approximately 10 miles upstream from the project site, draining a large area of steep mountain slopes. Approximately 8 miles downstream from the project site the Santa Ana River converges with Bear Creek. From there the Santa River flows through the interior basin of San Bernardino and Riverside County. The river eventually flows into the Prado Dam, Orange County and out to sea at Santa Ana River County Beach.

The project site also supports another water feature that runs north to south. This feature is shown on maps as Converse Creek. However, during inspection, the surveyor was unable to find a consistent bed and bank. This feature does not appear to have enough regular flowing water, or appropriate soils to create an ordinary high water mark, or support hydrophytic vegetation. For this reason, this feature may be considered a non-jurisdictional swale due to the lack of an ordinary high water mark, or bed and bank (see Attachment A). However, this feature drains into a culvert under Radford Camp Road in the southwestern portion of the project site before flowing into the Santa Ana River and is therefore hydrologically connected. Both the inlet and the outlet of the culvert do not appear to receive substantial flow due to the lack of a channel. Although this water feature may not be regulated as jurisdictional, a delineation would be necessary to determine its jurisdictional status.

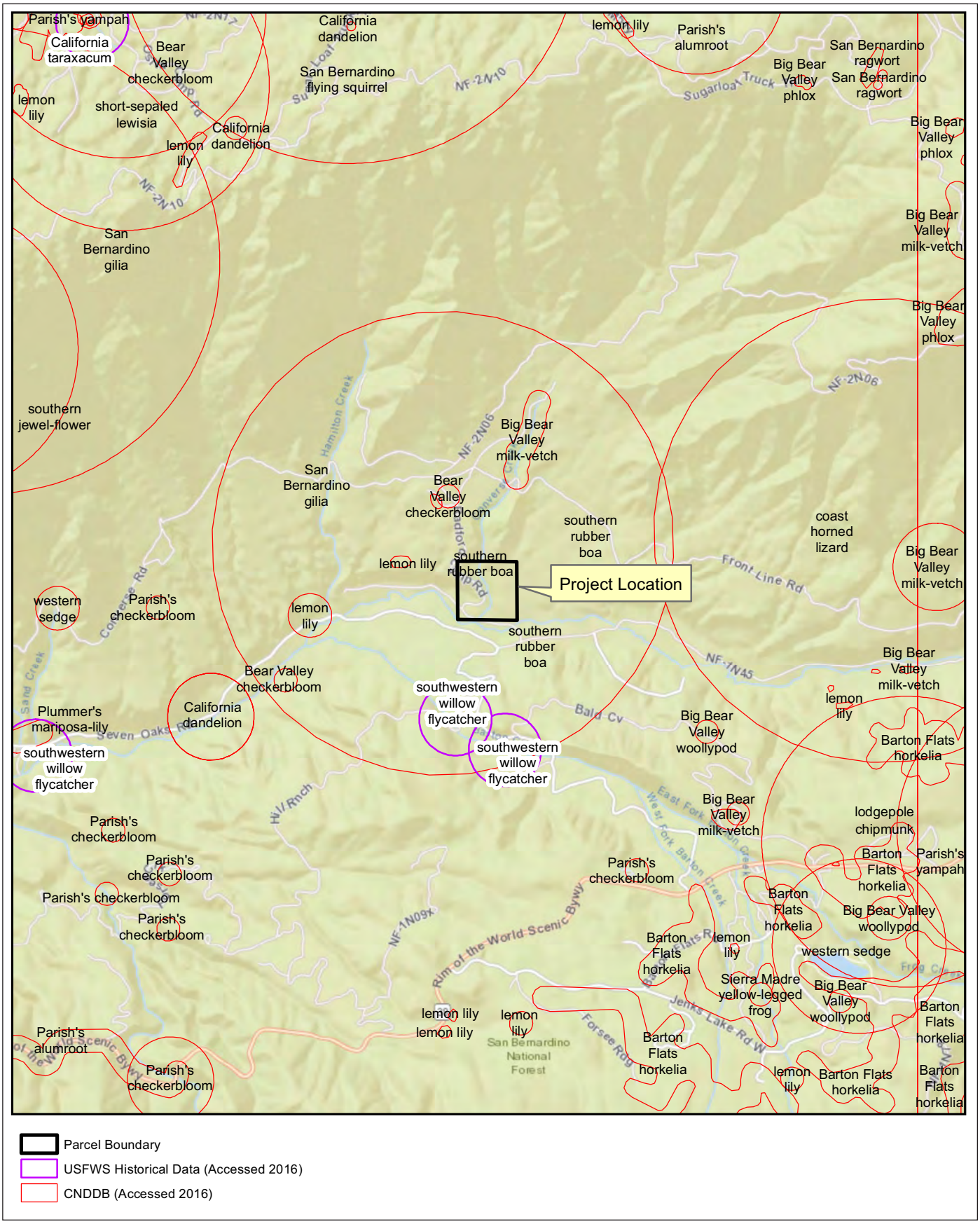
Project Impact Analysis

Vegetation Communities

Given the project's current design, the proposed would impact 1.57 acres of oak/coniferous forest and 4.98 acre of big sagebrush scrub (Exhibit 7). Table 4 details the project impacts to vegetation communities within the project site as proposed.

Table 4: Anticipated Project Impacts

Vegetation Community	Acreage within Parcel Boundary (acre)	Proposed to be Impacted (acre)
Oak/Coniferous Forest	28.00	1.57
Big Sagebrush Scrub	10.62	4.98
White Alder Riparian Forest	0.31	—

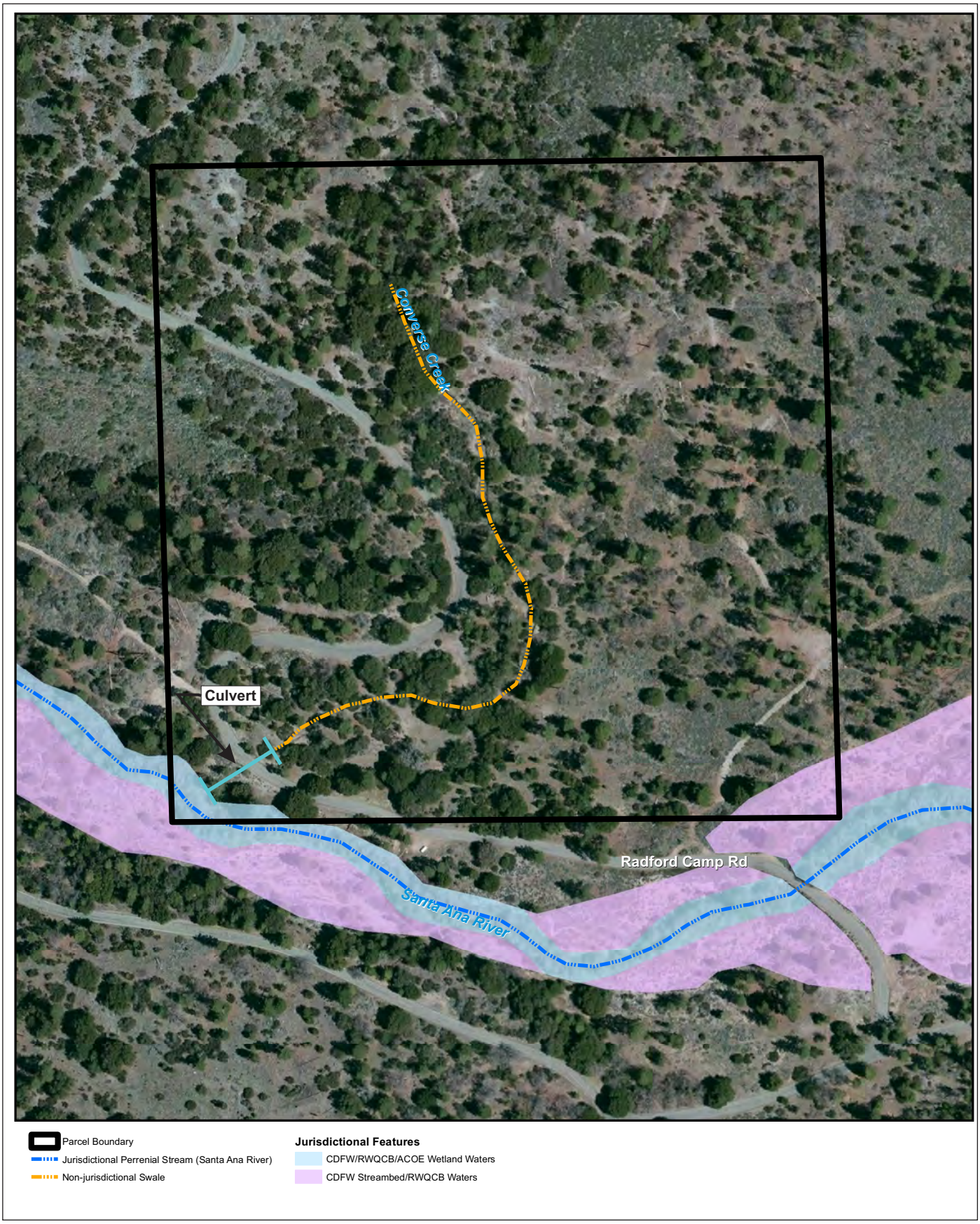


Source: Borcher Environmental Management, 2016

FIRSTCARBON SOLUTIONS™

0 0.25 0.5
Miles

Exhibit 5
CNDDB and USFWS Historical Observations



Source: Borcher Environmental Management, 2016

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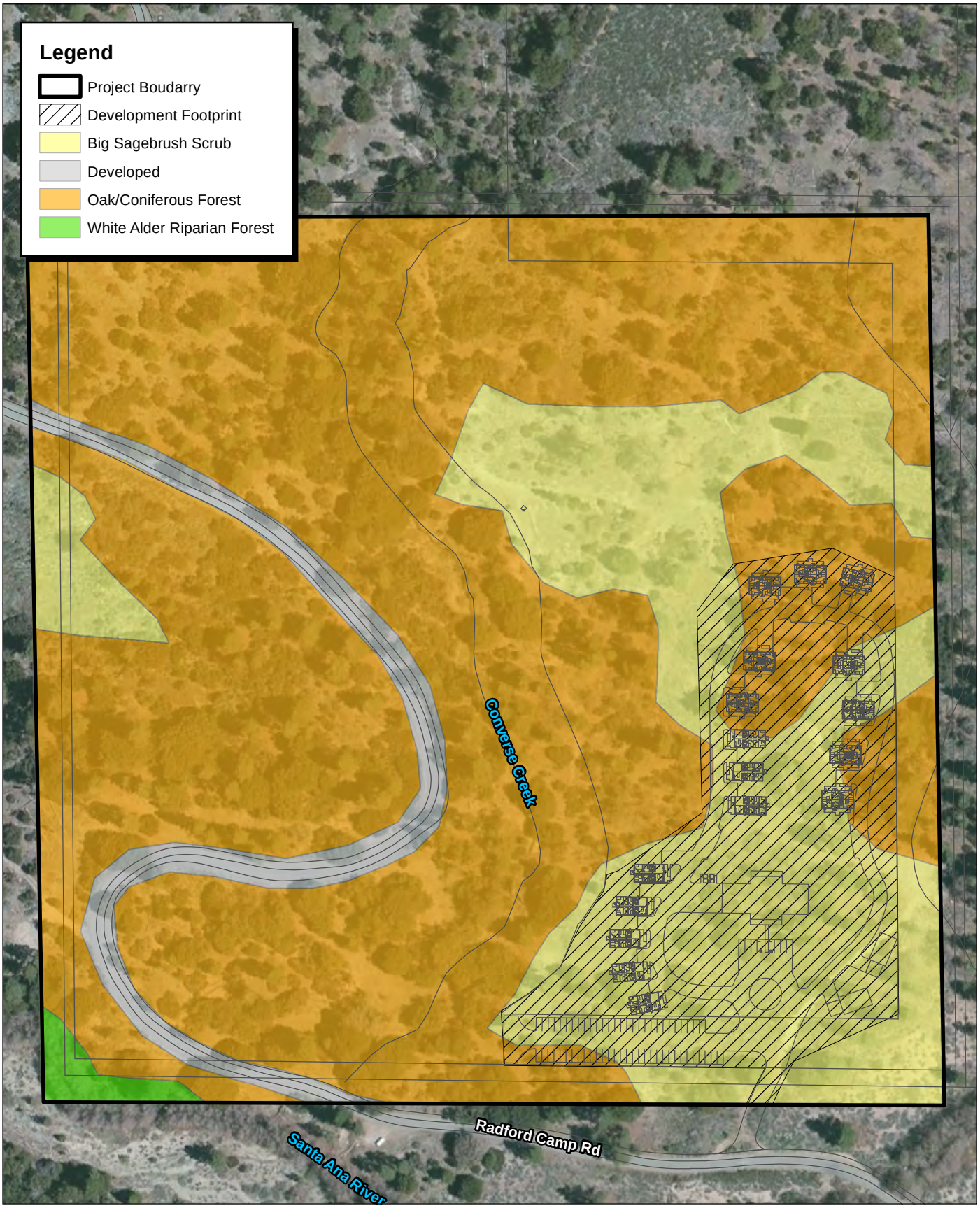
Exhibit 6
Jurisdictional Resources - Wetland/Waters



Source: Bing Imagery, 2015

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Exhibit 7
Site Plan and Vegetation Communities

Special Status Species

Wildlife

Potential impacts may occur to both State and Federally listed wildlife species, and non-listed special-status species. Focused surveys to determine presence/absence for listed species including flying squirrel, Southwestern willow flycatcher, southern rubber boa, and mountain yellow-legged frog may likely be required if the project design impacts occupied habitat. In each case focused surveys are required to be completed by qualified and/or permitted biologist and must occur during specific seasons for maximum detection. For example, Southwestern willow flycatcher surveys are required to be conducted between May and August, with each of the five surveys occurring in specific months. For southern rubber boa, final guidelines have not been approved. If present, each species will likely require consultation with state, federal, and/or local agencies to determine specific avoidance and minimization measures, and compensatory mitigation.

It is recommended that USFWS and CDFW be contacted for guidance on how to best proceed, given the project design, existing site conditions, and avoidance and/or potential mitigation measures for these species.

Impacts to non-listed special-status species potential habitat are relatively minor, given the proposed impact area of the project, and would be considered less than significant under CEQA guidelines.

Nesting Birds

The project site contains suitable nesting habitat for a number of shrub-nesting and tree-nesting birds. Impacts to nesting birds protected under the federal MBTA could be considered significant if the project activities cause a nest to fail. In this event, the project would be in violation of the MBTA.

Plants

No special-status plant species were detected during the initial project site visit. One unidentified milk-vetch species was observed near the southeast corner of the project site. Many of the special-status species are annuals that can only be positively identified during a species-specific blooming period; as a result, were not detectable during the reconnaissance survey visit. Focused special-status plant surveys should be conducted in order to determine presence/absence of the special-status species that have a potential to occur within the project site. Given the high number of special-status plants with potential to occur, a minimum of four surveys should be conducted at various times of the year. Surveys should be conducted during early and late spring, summer, and fall; however, exact timing will depend on annual variation of rainfall and temperatures.

Table 5: Focused Special Status Wildlife and Plant Survey Timing

Species or Type	Focused Survey/Trapping Timing
Southwestern willow flycatcher	late spring/summer
southern rubber boa	late spring/summer
mountain yellow-legged frog	spring/summer
San Bernardino flying squirrel	summer
Special-status plants	spring/summer/fall

Jurisdictional Wetlands and Waters

The project has been designed to avoid impacts to both the Santa Ana River and Converse Creek. For this reason, impacts to jurisdictional wetlands and waters are not expected and wetland and waters permits will not likely be required.

Wildlife Corridors

Construction of the proposed project will not impede wildlife movement through the Santa Ana River valley. The project is designed to be outside of the river floodplain in upland habitat that is common and abundant in the project site. The project does have the potential to increase traffic through the area, which may increase mortality of wildlife on roadways. However, use of the school and roadways is intermittent, and the minor increase in traffic will not likely have a substantial effect on wildlife movement through the area.

Wastewater Discharge

Through the San Bernardino County NPDES program, the project proponent will be required to develop a Water Quality Management Plan (WQMP). Please refer to the Technical Guidance Document for Water Quality Management Plans prepared for the County of San Bernardino Areawide Stormwater Program (SBC 2013).

United States Forest Service, San Bernardino

The project site occurs within lands zoned as Resource Conservation Areas managed by the San Bernardino National Forest. Additionally, the proposed project requires development of access roads on and through property owned by the Forest Service. Consultation with the Forest Service is required.

Mitigation

Potential impacts to vegetation communities, general wildlife, nesting birds, and special-status wildlife and plants can be mitigated by the implementation of avoidance and minimization measures. The final mitigation measures prior to, during, and post-construction will ultimately be recommended by the

local, state and federal agencies involved in the project permitting. Below are mitigation measures that may be required to reduce biological resources impacts:

- Provide a biological monitor during construction in order to minimize impacts to sensitive biological resources.
- Provide species specific resource training for all construction personnel.
- *Nesting birds*—If construction occurs during the nesting bird season (March 1–August 15), pre-construction surveys will likely be required. If identified nests may be adversely affected by construction activities, the qualified biologist will propose a no work, or limited buffer if appropriate.
- *Southwestern willow flycatcher*—If this species is present within 0.25 mile of the project site, construction activities within 900 feet of potential habitat may be limited to outside of the nesting and migration season (September 15-April 30). If work must occur during the southwestern willow flycatcher season a qualified biologist should survey and monitor for nesting flycatcher and recommend buffers as appropriate;
- *Mountain yellow-legged frog*—If present within the Santa Ana River the project proponent should consult with the appropriate agencies. Impacts may not be allowed within 200 feet of suitable habitat. Additionally if present, a specialized monitor should be present during construction.
- *Southern rubber boa*—If this species is present, construction activities may be limited to during seasons when rubber boa activities (March 1 through November 15). Specialized monitors should be present to clear work areas, and boulders and logs prior to removal. Exclusion fencing during construction should be considered based on the recommendations of the specialized monitor.
- *Special Status plants*—All special-status plants present should be flagged and avoided to the greatest extent feasible. If they cannot be avoided, salvage and restoration may be required.
- *Jurisdictional resources*—Development of a Storm Water Pollution Prevention Plan and implementation of Best Management Practices (BMPs) will likely be required to avoid impacts to jurisdictional wetlands and waters.

Conclusion and Recommendations

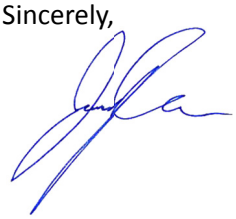
The project, as currently proposed, has the potential to significantly impact native vegetation communities and special-status wildlife and plants species that most likely will require mitigation measures to be implemented. Additionally, it is recommended that a spring survey to assess the current site conditions be performed by a botanist. This assessment will determine if focused rare plant surveys should be conducted for the species identified to have a high potential to occur within the project site during the species-specific blooming season. Upon completion of focused species surveys, an in-depth analysis of the environmental impacts proposed and a mitigation plan can be produced. If a species is

assumed or found to be present, specific avoidance and minimization measures will be developed in consultation with the appropriate regulatory agencies in order to reduce impacts to that species.

We recommend that the project proponent contact USFS, USFWS, CDFW, and San Bernardino County to discuss focused survey requirements for special-status wildlife. The project proponent should contact the USFS in order to initiate the process for development within the San Bernardino National Forest.

If you have questions regarding the analysis or conclusions presented herein, please contact me at 925.200.1656.

Sincerely,



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Enc: Attachment A: Site Photographs

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Attachment A:
Site Photographs

Photograph 1: Big sagebrush scrub in the foreground and oak/coniferous forest in the background, taken from the middle of the Survey Area, facing west.

Photograph 2: Big sagebrush scrub in the foreground and oak/coniferous forest in the background, taken from the middle of the property, facing west.

Photograph 3: Existing dirt access road within the middle of the property, facing north.

Photograph 4: Santa Ana River floodplain located within the southeast corner of the property, facing east.

Photograph 5: Santa Ana River and bridge approximately150 feet south of the property, facing east.

Photograph 6: Santa Ana River flowing through the white alder riparian forest within the southwest corner of property, facing south.

Photograph 7: Radford Camp Road traversing the southwest portion of property, facing west.

Photograph 8: Absence of defined bed and bank in non-jurisdictional swale (Converse Creek) in western portion of the property near mid-site, facing north.

Photograph 9: Non-jurisdictional swale (Converse Creek) in northwestern portion of property showing absence of defined bed and bank, facing north.

Photograph 10: Non-jurisdictional swale (Converse Creek) in southwestern area of the property near Radford Camp Road demonstrating absence of defined bed and bank, facing north.

Photograph 11: Culvert inlet under Radford Camp Road where non-jurisdictional swale (Converse Creek) drains under road, facing south.

Photograph 12: Oak/coniferous forest west of Radford Camp Road in western portion of property, facing south.

Photograph 13: Expansion tank for a private water well, facing southwest.

Photograph 14: Fallen logs providing potential habitat for Southern rubber boa, facing southwest.