# Natural Environment Study

State Route 74 Safety Project

From Antonio Parkway/La Pata Road to Cristianitos Road

12-ORA-74 PM 2.93/5.06

EA No. 0L7200

**January 2013**

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

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STATE OF CALIFORNIA
Department of Transportation

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# Summary

The California Department of Transportation – District 12 (Department) proposes to improve State Route 74 (SR-74; Ortega Highway) in unincorporated Orange County by widening the existing shoulder from 2 to 4 feet (ft) (0.6 to 1.22 meters [m]) between post mile (PM) 2.93 and PM 5.06.

This Natural Environment Study (NES) has been developed in support of the preparation of an Environmental Document in compliance with the California Environmental Quality Act (CEQA). Due to the fact that the conditions of biological resources are dynamic (i.e., location of special-status species and quality of habitat may change within the next several years), the impact assessment may need to be revised as more current annual data is obtained. The results presented in this NES are based on recent literature searches and biological resource surveys conducted in 2011 and 2012.

In 2011 and early 2012, reconnaissance-level biological resource surveys, habitat assessments, focused plant and wildlife surveys, an oak tree assessment, and a jurisdictional delineation were performed to document the existing conditions of biological resources within the Biological Study Area (BSA). The BSA included areas of undeveloped land within Department right of way (ROW) that are dominated by ruderal and native vegetation.

One listed species (arroyo toad [ARTO]) was detected during the course of the studies and several special-status species were observed within the BSA. A combination of avoidance and minimization measures and compensatory mitigation would reduce the overall adverse impacts to biological resources. Invasive species would be removed from the project work area and controlled during construction to ensure compliance with Executive Order (EO) 13112.

A formal jurisdictional delineation survey determined that although wetlands are not present, other jurisdictional features are present within the project area subject to the jurisdiction of the California Department of Fish and Wildlife (CDFW) and the United States Army Corps of Engineers (USACE). Because of this, the proposed project will require permits from regulatory agencies, including the CDFW (pursuant to Section 1602 of the California Fish and Game Code), the USACE (pursuant to Section 404 of the Clean Water Act [CWA]), and the Regional Water Quality Control Board (RWQCB) (pursuant to Section 401 of the CWA). To offset impacts to these

jurisdictional areas, a compensatory mitigation program may need to be developed. Compensatory mitigation may involve habitat restoration within Department ROW, at agency-approved off-site locations, such as invasive plant removal in San Juan Creek or coordination with the City of San Juan Capistrano, payment of in-lieu fees, and/ or participation in agency-approved mitigation banks.

At a minimum, informal Federal Section 7 consultation between the Department, authorized to act on behalf of the Federal Highway Administration (FHWA), and the United States Fish and Wildlife Service (USFWS) will occur to address potential impacts to designated critical habitat for the federally listed ARTO. In this case, the USFWS is likely to concur with a conclusion that the proposed action “may affect but is not likely to adversely affect” any federally listed species.

A Section 2080 permit from the CDFW is not expected to be required for the proposed project.

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# List of Abbreviated Terms

| | |
|---|---|
| ac | acre |
| amsl | above mean sea level |
| ARTO | arroyo toad |
| BMP | Best Management Practices |
| BSA | Biological Study Area |
| CAGN | coastal California gnatcatcher |
| Cal-IPC | California Invasive Plant Council |
| CDFW | California Department of Fish and Wildlife |
| CEQA | California Environmental Quality Act |
| CESA | California Endangered Species Act |
| CFR | Code of Federal Regulations |
| CNDDB | California Natural Diversity Database |
| CNPS | California Native Plant Society |
| CSS | coastal sage scrub |
| CWA | Clean Water Act |
| dbh | Diameter at breast height (~4 ft) |
| Department | California Department of Transportation |
| EB | eastbound |
| EO | Executive Order |
| ESA | Environmentally Sensitive Area |
| FESA | Federal Endangered Species Act |
| FHWA | Federal Highway Administration |
| ft | foot/feet |
| GIS | geographic information systems |
| HMMP | Habitat Mitigation and Monitoring Plan |
| I-5 | Interstate 5 |
| in | inch(es) |
| IPaC | Information, Planning and Conservation |
| ISA | International Society of Arboriculture |
| km | kilometer(s) |
| KP | kilometer post |

| | |
|---|---|
| LBVI | least Bell's vireo |
| LSA | LSA Associates, Inc. |
| m | meter(s) |
| MBGR | metal beam guard rail |
| MBTA | Migratory Bird Treaty Act of 1918 |
| mi | mile(s) |
| MOU | Memorandum of Understanding |
| MPAH | Master Plan of Arterial Highways |
| NB | northbound |
| NCCP | Natural Communities Conservation Plan |
| NEPA | National Environmental Policy Act |
| NES | Natural Environment Study |
| NW | northwest |
| OCTA | Orange County Transportation Authority |
| OHWM | Ordinary High Water Mark |
| PM | post mile |
| ROW | right of way |
| RPR | California Rare Plant Rank |
| RWQCB | Regional Water Quality Control Board |
| SAA | Streambed Alteration Agreement |
| SAN | Streambed Alteration Notification |
| SB | southbound |
| SR-55 | State Route 55 |
| SR-74 | State Route 74 |
| SR-241 | State Route 241 |
| SSC | California Species of Special Concern |
| SWWF | southwestern willow flycatcher |
| SWPPP | Storm Water Pollution Prevention Plan |
| TCE | temporary construction easements |
| TNW | Traditional Navigable Water |
| USACE | United States Army Corps of Engineers |
| USC | United States Code |

| | |
|---|---|
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| WB | westbound |

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# Chapter 1. Introduction

The California Department of Transportation (The Department) proposes to widen the existing shoulder on State Route 74 (SR-74) to a continuous 4-foot (1.22 m) shoulder in both directions, install centerline rumble strips, construct turnouts, and install metal beam guard rail (MBGR) at various locations. Shoulder widening will require roadway excavation in certain cut sections and construction of retaining walls in certain fill sections. Most existing culverts within the project limits will be replaced. This safety project extends from east of Antonio Parkway/La Pata Avenue (PM 2.930) to west of Conrock Entrance (PM 5.069) in an unincorporated area of Orange County. The total length of the project is 2.13 miles (mi) (3.13 kilometers [km]. Figure 1 shows the project location. The Department is the Lead Agency for compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) (under NEPA authority assigned to the Department by the U.S. Department of Transportation in Memorandums of Understanding (MOUs) 6004 and 6005 [effective July 1, 2007]).

## 1.1. Project History

This proposed safety project (project) is included in the 2011 Federal Regional Transportation Improvement Program (FTIP). It is also included in the Southern California Association of Governments (SCAG) 2008 Regional Transportation Plan (RTP).

SR-74, also known as Ortega Highway, is a major east-west arterial in south Orange County extending from Interstate 5 (I-5) in the City of San Juan Capistrano northeast to Riverside County where it intersects Interstate 15 (I-15) before continuing northeast toward the City of Palm Desert in Riverside County. The first section of highway from post mile (PM) 0.0 to 3.0 is a four-lane highway, except from PM 1.0 to 1.9, which is a two-lane highway. This section is fairly flat terrain and surrounded by business, commercial, and residential developments. The second section of SR-74 from PM 3.0 to 16.6 is a two-lane winding highway with hilly and mountainous terrain surrounded by undeveloped areas.

SR-74 was constructed circa 1930/32 from plans prepared for Joint Highway District 15. The road was originally designed to be two lanes, with a maximum grade of 6 percent, for vehicle speeds of 25 miles per hour (mph) to 40 mph. In 1959, this route was included within the State Freeway and Expressway System.

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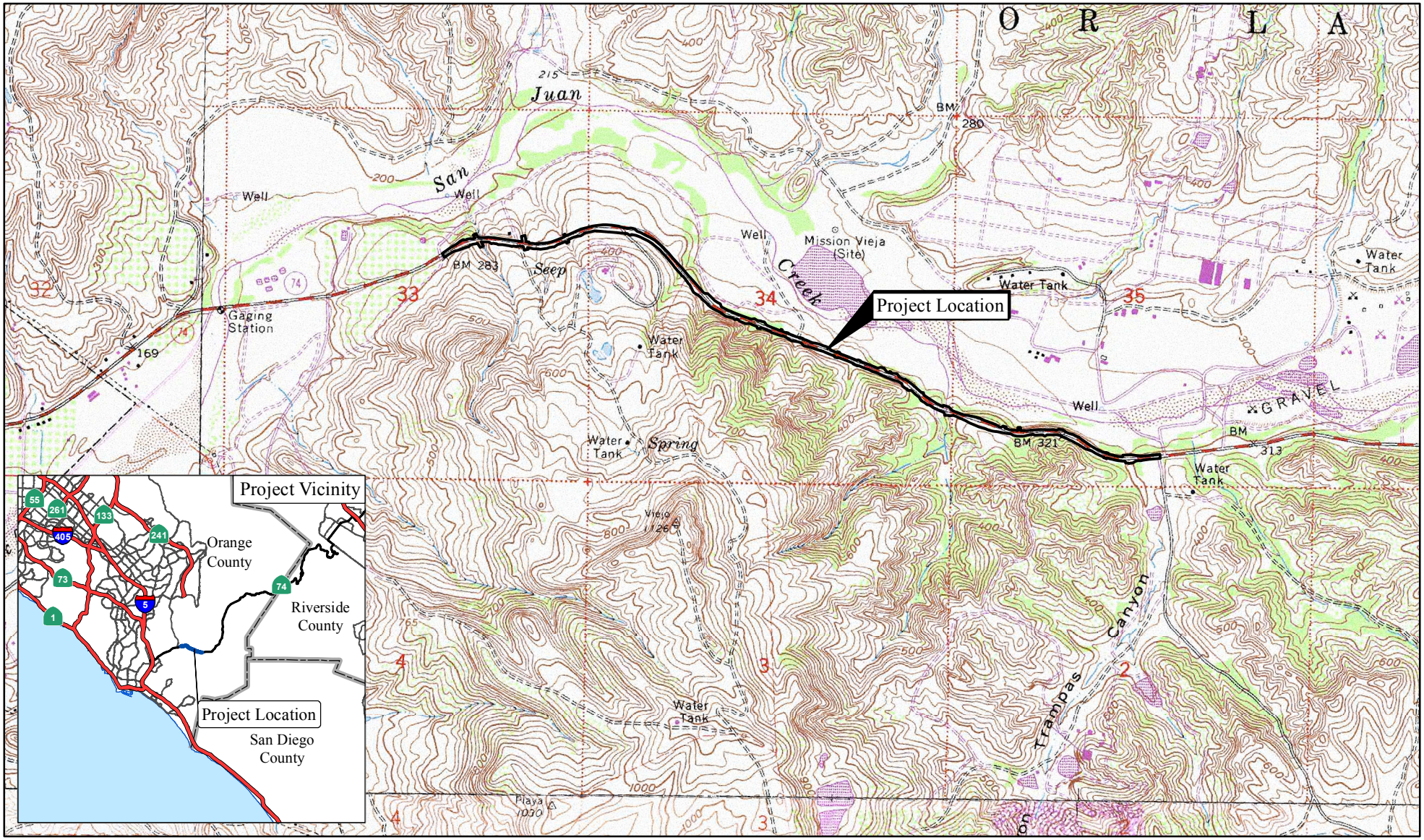


LEGEND

Project Location

FIGURE 1

0 1000 2000

FEET

SOURCE: USGS 7.5' QUAD - CANADA GOBERNADORA ('88)

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*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Project Location Map

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Currently, SR-74 in its entirety provides interregional access between south Orange County and Riverside County. This particular section of SR-74 serves commuter traffic from the adjacent residential communities, Riverside County, and interregional recreational traffic. The highway alignment follows and crosses San Juan Creek to the north. During weekday morning and afternoon peak operating hours, commuters who travel from Riverside County to southern Orange County commonly use SR-74. Recreational traffic is common during the weekends.

### 1.1.1. Project Purpose and Need

This segment of SR-74 is a two-lane winding highway with compound curves at certain locations. Most of the existing horizontal curves within these project limits do not meet standard stopping sight distance due to non-standard shoulder widths and non-standard horizontal clearance. Currently, there is no median barrier or centerline rumble strips. The project is needed because SR-74 currently experiences numerous cross-centerline collisions. The highway also has an inadequate number of turnout lanes for emergency stops. The purpose of the project is to reduce cross-centerline collisions by widening the shoulders, installing centerline rumble strips and metal beam guard rails, and to construct turnout lanes.

## 1.2. Project Description

The project will require acquisition of temporary construction easements, permanent easements, and slope easements. The project proposes the following specific actions:

- Widen the existing 2-foot [ft] (0.60 meters [m]) shoulder to the standard 4 ft (1.22 m) shoulder
- Install centerline rumble strips
- Construct turn-out lanes: 12 ft (3.66 m) turn-out lanes on the eastbound (EB) direction and 15 ft (4.57 m ) turn-out lanes on the westbound (WB) direction
- Replace and install metal beam guard rail (MBGR) at various locations
- Excavate at the toe of slope and shave the adjacent slope in cut areas
- Remove and replace most existing culverts
- Construct retaining walls and anchored walls in fill areas
- Acquire easements for temporary construction, permanent use, and slopes

### 1.2.1. Alternatives

There are two alternatives being considered for this project: the “No Build Alternative” (Alternative 1) and the “Build Alternative” (Alternative 2).

#### 1.2.1.1. ALTERNATIVE 1: NO BUILD

The No Build Alternative proposes no action. This alternative would not alleviate existing and projected congestion in the study area, and would not meet the project purpose and need. SR-74 would be maintained in its existing two-lane condition and would continue to be used by commuters, recreation traffic, and commercial trucks. The No Build Alternative provides a baseline for comparing the effects associated with the Build Alternatives since the environmental document must consider the effects of not implementing the project.

#### 1.2.1.2. ALTERNATIVE 2: PROPOSED BUILD

Alternative 2 would upgrade the existing non-standard 2 ft (0.60 m) shoulders to 4 ft (1.22 m) continuous shoulders in both directions. This alternative was developed to achieve the project purpose and need while avoiding or minimizing environmental impacts.

##### *SR-74 Roadway*

There are two existing general-purpose lanes. Widening the shoulders and creating turn-out lanes will improve the traffic delay caused by high traffic volumes often associated with slower-moving trucks and will reduce cross centerline collisions.

##### *Drainage*

The existing general drainage pattern within the project limits is from south of SR-74 carried to the north side of the highway via culverts and a drainage system. The proposed project will not change the existing drainage pattern. All existing inlets along the edge of shoulder will be extended to the new edge of shoulder. The existing longitudinal drainage systems along the existing edge of shoulder will be relocated to the new edge of shoulder, with additional inlets to carry the additional drainage due to the widening.

##### *Signing*

Signs will be removed and relocated to accommodate the widening.

##### *Right-of-Way Acquisition*

The project requires no right of way (ROW) acquisition; however, temporary construction easements (TCEs) will be obtained.

# Chapter 2. Study Methods

## 2.1. Regulatory Requirements

### 2.1.1. Review of Jurisdiction Subject to Section 404 of the Clean Water Act

Pursuant to Section 404 of the Clean Water Act (CWA), the United States Army Corps of Engineers (USACE) regulates the discharge of dredged and/or fill material into waters of the United States. The term "waters of the United States" is defined in 33 Code of Federal Regulations (CFR) Part 328 and currently includes (1) all navigable waters (including all waters subject to the ebb and flow of the tide), (2) all interstate waters and wetlands, (3) all impoundments of waters mentioned above, (4) all tributaries with a significant water quality nexus to waters mentioned above, (5) the territorial seas, and (6) all wetlands adjacent to waters mentioned above.

The discharge of dredged or fill material (temporarily or permanently) into waters of the United States (including wetlands) requires prior authorization from the USACE pursuant to Section 404 of the CWA. Upon a jurisdictional decision (concurrence) from the USACE, a Section 404 permit will be required for the project.

### 2.1.2. Review of Jurisdiction Subject to Section 1600 of the California Fish and Game Code

Pursuant to Division 2, Chapter 6, Sections 1600–1602 of the California Fish and Game Code, the California Department of Fish and Wildlife (CDFW) regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife.

Unlike the USACE, CDFW regulates not only the discharge of dredged or fill material, but all activities that alter streams and lakes and their associated habitat. These additional areas include some artificial stock ponds and irrigation ditches constructed on uplands and the addition of riparian habitat supported by a river, stream, or lake regardless of the riparian area's federal wetland status. In addition, the lateral extent of streambed may, in some situations, extend to include broader cross-sectional widths of drainages and floodplains above and beyond the area contained within the USACE ordinary high water mark (OHWM), depending on the hydrological regime of a stream or river and riparian vegetation. For this reason, the dimensions of a CDFW jurisdictional streambed may vary substantially from the measured OHWM within the same stream or river.

A CDFW Streambed Alteration Notification (SAN) is required for all activities resulting in impacts to streambeds and their associated riparian habitats, and a Streambed Alteration Agreement (SAA) may be needed. An SAA is expected to be required for this project.

### 2.1.3. Review of Jurisdiction Subject to Section 401 of the Clean Water Act

The Regional Water Quality Control Board (RWQCB) is responsible for the administration of Section 401 of the CWA. Typically, the areas subject to RWQCB jurisdiction coincide with those of the USACE (i.e., waters of the United States, including any wetlands). RWQCB also asserts authority over waters of the State under waste discharge requirements pursuant to the Porter-Cologne Water Quality Control Act.

Upon a jurisdictional decision (concurrence) from the USACE, a Section 401 Water Quality Certification from the RWQCB will be required for the project and is based on the area defined in the jurisdictional determination from the USACE.

### 2.1.4. Conflicts or Consistencies with Existing and Pending Habitat Conservation Plans

The Southern Subregion Natural Community Conservation Plan/Master Streambed Alteration Agreement/Habitat Conservation Plan (NCCP/MSAA/HCP) was prepared in July 2006 (County of Orange, 2006) and the associated Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) was approved by USACE and certified by the County. However, CDFW did not sign the Implementation Agreement for the NCCP portion of the plan. Henceforth in this document, the approved document will be referred to as the MSAA/HCP.

The MSAA/HCP acknowledges the need for future road improvements in the proposed project area (MSAA/HCP, Figure 166-M). The proposed project does not conflict with the MSAA/HCP. However, the project is not considered a covered activity because the Department is not a participating entity in the MSAA/HCP.

### 2.1.5. Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 defines “critical habitat” as those geographical areas: (1) that are essential for bringing an endangered or threatened species to the point where it no longer needs the legal protections of the FESA; and (2) that may require special management considerations or protection. In other words, the critical habitat consists of those areas that must be managed to

permit an endangered or threatened species to recover to a level where it is safe, for the foreseeable future, from the danger of extinction. Critical habitat areas may require special management considerations or protections.

Section 9 of the FESA prohibits the "take" of listed species by anyone unless authorized by the United States Fish and Wildlife Service (USFWS). Take is defined as "conduct which attempts or results in the killing, harming, or harassing of a listed species." Therefore, in order to comply with the FESA, any proposed project should be assessed prior to construction to determine whether the project will impact listed species or, in the case of a federal action on the project, designated critical habitats. If no federal action is associated with the proposed project, and the project will result in take of listed species, authorization from the USFWS in the form of a Section 10(a) take permit and an accompanying HCP are required. If a federal action exists and the project may impact listed species or designated critical habitat, then Section 7 consultation with the USFWS is required. That consultation can result in an incidental take authorization through a biological opinion.

### 2.1.6. Special Area Management Plan

In addition to the usual regulations that apply throughout the country, the USACE has the authority to develop Special Area Management Plans (SAMPs) for certain areas designated by the USACE. With a SAMP, the USACE undertakes a comprehensive review of aquatic resources in an entire watershed. The goal is to analyze potential impacts at the watershed scale in order to identify priority areas for preservation, identify potential restoration areas, determine the least environmentally damaging locations for proposed projects, and establish alternative permitting processes appropriate for the SAMP areas. The alternative permitting process facilitates reasonable economic development and infrastructure while also providing for aquatic resource protection. SAMPs are designed to be conducted in geographic areas of special sensitivity under development pressure. These comprehensive and complex efforts require the participation of multiple local, State, and federal agencies. In addition, the USACE considers public and stakeholder involvement an essential part of a successful SAMP. A SAMP for the San Juan Creek has been developed and approved by the USACE in cooperation with the County and Rancho Mission Viejo (RMV).

The areas of USACE and CDFW jurisdiction within the project area are included within the San Juan Creek Watershed and the SAMP for the San Juan Creek Watershed. The project's relationship to this SAMP is discussed in more detail below.

#### 2.1.6.1. SAN JUAN CREEK/WESTERN SAN MATEO CREEK WATERSHED SPECIAL AREA MANAGEMENT PLAN (SAN JUAN CREEK SAMP)

An SAMP for the San Juan Creek Watershed implementation was completed in March 2012. It was developed and approved by the USACE in cooperation with the County and RMV. While the planning process was coordinated with the concurrent NCCP/HCP/MSAA, which covered a larger area, it had a separate approval and implementation process and thus is discussed separately here. The San Juan Creek Watershed is approximately (113,000 acres [ac] (45,729 hectares [ha]), which includes approximately 8,730 ac (3,532 ha) of riparian habitat. Of that riparian habitat total, approximately 3,176 ha (7,850 ac) will be preserved under the chosen SAMP alternative. Within the RMV Planning Area, there are approximately 2,174 ac (879 ha) of riparian habitat, of which 1,693 ac (685 ha) will be conserved. This includes the preservation of such mainstem creeks as San Juan Creek, Chiquita Creek, Gobernadora Creek, Cristianitos Creek, La Paz Creek, Gabino Creek, and Talega Creek. The impacts of authorized development and associated infrastructure will be mitigated by the preservation and adaptive management of certain aquatic resource conservation areas.

The areas of USACE and/or CDFW jurisdiction (i.e., areas where tributaries of San Juan Creek intersect with the project alignment) are included within the San Juan Creek Watershed and the SAMP for the San Juan Creek Watershed. Temporary project impacts are subject to the USACE General Permit Number 74 (Permit Number SPL-2010-01022-CJF). Permanent project impacts are subject to the abbreviated alternative permitting process associated with the SAMP. If the project is found to be consistent with the San Juan Creek SAMP, a Letter of Permission (LOP) will be issued to authorize the discharge of dredged and/or fill materials into waters of the U.S. If the project is found not to be consistent with the San Juan Creek SAMP, an Individual Permit will be required. As part of the San Juan Creek SAMP process, selected Nationwide Permits (NWPs) have been revoked. Therefore, an NWP for the SR-74 Safety Project cannot be obtained.

### 2.1.7. California Endangered Species Act

The California Endangered Species Act (CESA) is administered by CDFW and prohibits the take of plant and animal species identified as either threatened or endangered in the State of California by the Fish and Game Commission (Fish and Game Code Section 2050–2097). “Take” means to hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill. Sections 2080.1 and 2081 of CESA allow CDFW to authorize exceptions to the prohibition of take of the State-listed

threatened or endangered plant and animal species for purposes such as public and private development. CDFW authorization of "take" cannot jeopardize the continued existence of any listed species. Chapter 4 of this NES provides details on the proposed project's impacts to State-listed plant and wildlife species.

### 2.1.8. Invasive Species

On February 3, 1999, President Clinton signed Executive Order (EO) 13112, requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "…any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration (FHWA) guidance issued August 10, 1999, directs the use of the State's noxious weed list to define the invasive plants that must be considered as part of the CEQA analysis for a proposed project.

## 2.2. Studies Required

### 2.2.1. Definition of Biological Study Area

The BSA was determined by incorporating electronic data provided by the Department's design engineer into a geographic information system (GIS) layout, which included areas of potential direct effect. For surveys such as the botanical, oak tree assessment, and jurisdictional delineation, the limits of the BSA were generally within and immediately adjacent to the project area, but were limited to within the Department ROW due to lack of access permission. The BSA studies were limited where access was not granted, but overall the surveys were not compromised. For the arroyo toad (*Anaxyrus californicus*; ARTO) and least Bell's vireo (*Vireo bellii pusillus*; LBVI) surveys, the survey limits of the BSA were extended up to 2,200 ft (670.6 m) and 500 ft (152.4 m), respectively, beyond the maximum extent of potential direct effect where necessary to identify sensitive biological resources. These areas are referred to as the ARTO BSA buffer area and the LBVI BSA buffer area. The BSA and both BSA buffer areas are depicted in Figure 2.

### 2.2.2. General Surveys and Habitat Assessments

Prior to performing the field surveys, existing documentation relevant to the BSA was reviewed. The most recent records of the California Natural Diversity Database (CNDDB) (Version 3.1.0) and the California Native Plant Society Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2011) were

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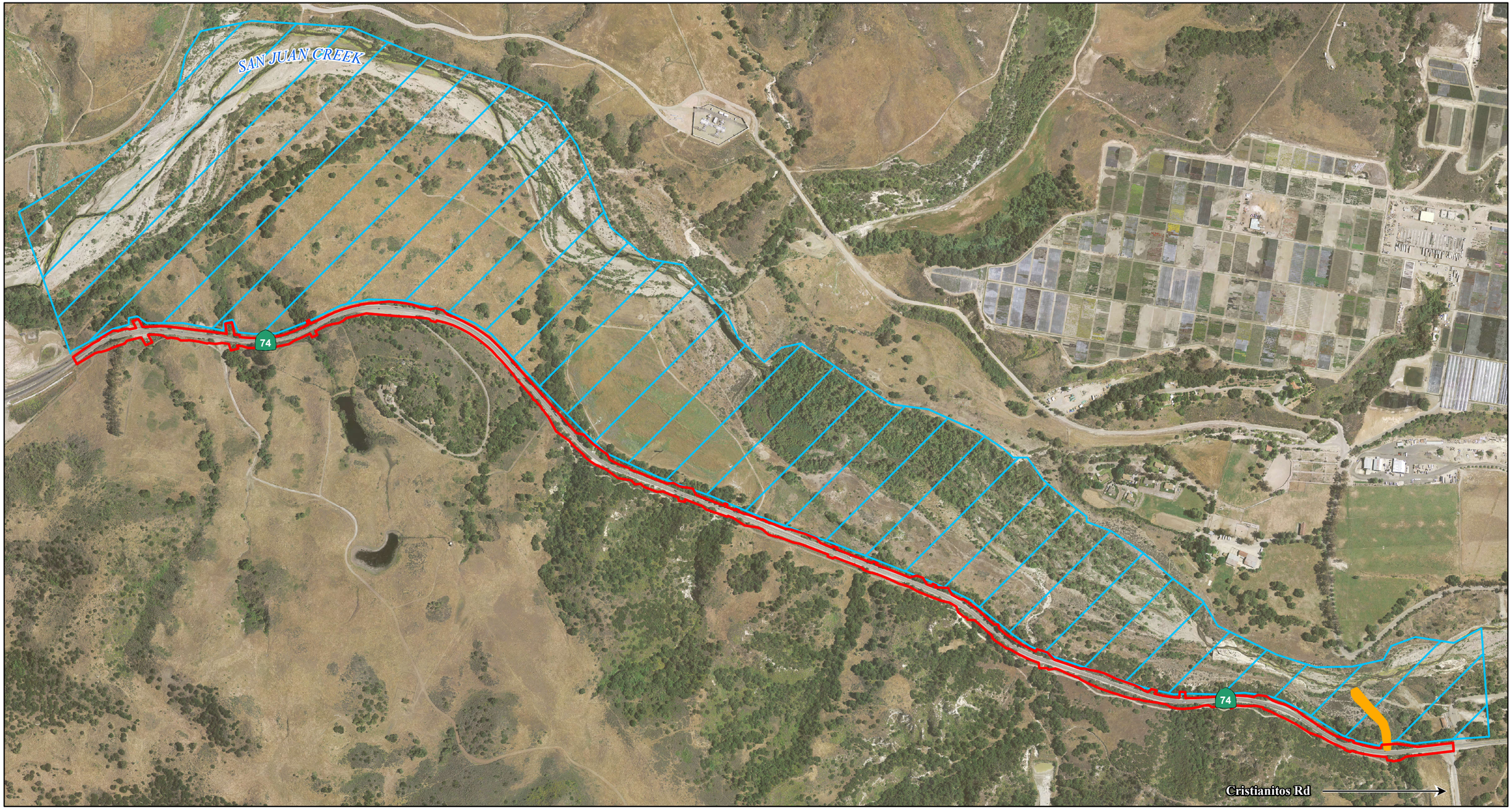


LEGEND

- Project Limits/Biological Study Area (BSA)
- Least Bell's Vireo Survey Buffer
- Arroyo Toad Survey Buffer

N

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FEET

Eagle Aerial (4/2011); Caltrans (2012); LSA (2012)

I:\CDT1103\SR74 Pavement Rehabilitation\GIS\ProjLoc_BSA.mxd (11/5/2012)

FIGURE 2

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Biological Study Area (BSA) and Buffers: Arroyo Toad and Least Bell's Vireo

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reviewed for the quadrangles containing and surrounding the BSA (i.e., *El Toro, Santiago Peak, Alberhill, San Juan Capistrano, Cañada Gobernadora, Sitton Peak, Dana Point, San Clemente,* and, *Margarita Peak, California* United States Geological Survey [USGS] 7.5-minute quadrangles). These databases contain records of reported occurrences of federal- or State-listed endangered, threatened, proposed endangered, or threatened species; California Species of Special Concern (SSC); or otherwise special-status species or habitat that may occur within or in the immediate vicinity of the BSA.

In addition, a list of proposed, threatened, or endangered species potentially occurring within the BSA was generated by the USFWS online Information, Planning and Conservation (IPaC) decision support system in response to project information provided on January 23, 2012. This list meets the requirements of Section 7(c) of the Endangered Species Act of 1973, as amended, and is provided in Appendix A.

### 2.2.3. Botanical Surveys

Plant communities were determined in general accordance with categories set forth in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). Vegetation communities were mapped by LSA biologist Stan Spencer on June 19, 2011. Vegetation communities were mapped on an orthographically corrected 1-inch (in) (2.54 cm) = 200 ft (60.9 m) aerial photograph.

The focused plant surveys within the BSA were initiated on May 4, 2011, by LSA botanist Stan Spencer, with follow-up surveys on May 18 and June 29, 2011. The flowering season for native plant species varies and is dependent on the frequency, duration, and seasonal timing of rainfall events, moisture availability, and soil and air temperatures. The potential for detection of plant species is variable from month to month and year to year. Therefore, the timing of the survey was selected to correspond with the optimal time for detecting special-interest plants in the BSA.

To adequately identify habitat types (i.e., plant communities) within the project area, survey methods included driving the project area and stopping in the SR-74 ROW to access habitat areas and vantage points. The biologist investigated the roadside areas on foot or with the aid of binoculars if foot access was not possible.

The surveys were floristic in nature, and all plant species encountered in the BSA were identified to the taxonomic level required to determine rarity status. Plant nomenclature follows that of *The Jepson Manual, Higher Plants of California* (Hickman 1993, as updated at http://ucjeps.berkeley.edu/interchange/). A copy of the Plant Survey Memorandum is included as Appendix B. All vascular plant species

observed during the surveys were noted and are included in Appendix C. No special-interest plant species were found during the survey.

### 2.2.4. Wildlife Surveys

All wildlife species detected during the general and focused surveys were noted, and a species list is included in Appendix D.

#### 2.2.4.1. Focused Arroyo Toad Surveys

A total of six ARTO auditory surveys were conducted between April 27 and June 29, 2011, by LSA biologists Ingri Quon, Mathew Teutimez, and Sara Louwsma. Surveys did not follow protocol techniques since San Juan Creek, which is on private land, was not visually surveyed for egg masses, tadpoles, or female adult toads. Therefore, the surveys were conducted at nighttime from the Department SR-74 ROW, when male ARTO vocalizations can be detected from a distance. The area in which vocalizations could be heard include the ARTO BSA Buffer, as depicted in Appendices L and M. Surveys were positive for calling male ARTO throughout most of San Juan Creek in the vicinity of the BSA. A copy of the ARTO survey report is included in Appendix E.

#### 2.2.4.2. Focused Riparian Bird Surveys

Focused LBVI surveys and concurrent surveys for any special-status riparian bird species known to occur or potentially occurring in the BSA were conducted in 2011 within the BSA, as well as the LBVI BSA Buffer Area. The focused surveys were conducted between May 19 and July 28, 2011, by LSA biologists Ingri Quon and Matthew Teutimez. Surveys were conducted in accordance with the survey protocol set forth for LBVI pursuant to permit requirements. Surveys were negative for LBVI in the vicinity of the BSA. A copy of the LBVI survey report is included in Appendix F.

#### 2.2.4.3. Coastal California Gnatcatcher Habitat Suitability Assessment

On May 19, 2011, LSA biologist Ingri Quon (Federal Fish and Wildlife Permit TE-777965-9 and a letter permit from the CDFW attached to Scientific Collecting Permit SC-000777 covering conditions for research on listed birds [July 23, 2009–April 12, 2012]) conducted a coastal California gnatcatcher (CAGN) habitat suitability assessment survey on both sides of SR-74. Suitable vegetation (i.e., coastal sage scrub [CSS]) for CAGN exists in patches along the south side of SR-74, but was not of a suitable size (acreage) to support a viable CAGN territory. CAGN territories are

typically from less than 2.5 ac (1 ha) to 22 ac (8 ha) (Mock 2004). In addition, most of these small patches of CSS were surrounded by mature oak woodland and/or extensive grassland rather than nearby CSS, which makes them less desirable due to either increased predation and/or limited foraging habitat. Protocol CAGN surveys were not conducted and no CAGN were incidentally detected during other visits to the BSA.

#### 2.2.4.4. BAT HABITAT SUITABILITY ASSESSMENT

To ascertain the potential for bat foraging and roosting activity within the BSA and immediate vicinity, a bat habitat suitability assessment was carried out in two parts. The first consisted of a preliminary daytime habitat assessment conducted along the length of the proposed work on SR-74 in July 2011, while the second component of the assessment consisted of follow-up nighttime surveys conducted in late August and early September 2011. All aspects of the assessment were conducted and/or directly supervised by LSA senior biologist and bat specialist Jill Carpenter.

Potential foraging habitat was assessed throughout the project area on the basis of vegetation composition, existence of adjacent habitat, and accessibility. Potential roosting sites were identified through the examination of trees and culvert structures. Large trees suitable for foliage- and crevice-roosting species were noted. Two acoustical evening surveys were conducted with positive results for foraging bats, night roosting was confirmed at each of the three metal culverts within the BSA, and potentially suitable day roosts were observed throughout the project area. A copy of the bat survey memorandum is included in Appendix G.

### 2.2.5. Jurisdictional Delineation

A copy of the Jurisdictional Delineation Report is included in Appendix H. The fieldwork for this evaluation was conducted by LSA biologists Leo Simone and Erin Martinelli on October 18 and 19, 2011, with a follow-up visit on February 29, 2012, and by Erin Martinelli and Matthew Teutimez on January 19 and 20, 2011.
Where access was available, the study area was surveyed on foot for both federal and State jurisdictional areas. Where access was not available (e.g., no permission granted by property owner, inaccessibly steep slopes, prevalence of poison oak, or fencing), areas were analyzed from property boundaries with the aid of binoculars. In these instances, potentially jurisdictional areas were assumed present if resources were observed (e.g., riparian vegetation, drainages, or v-ditches).

Areas of potential jurisdiction were evaluated according to USACE and CDFW criteria. The boundaries of the potential jurisdictional areas were observed in the field and mapped on a series of aerial photographs (scale 1 in [2.54 cm] = approximately 100 ft [30.48 m]), which together show the entire study area. Measurements of federal and State jurisdictional areas mapped during the course of the field investigation were determined by a combination of direct and estimated measurements taken in the field and measurements taken from the aerial photographs.

Areas supporting species of plant life potentially indicative of wetlands were evaluated according to routine wetland delineation procedures described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Regional Supplement) (USACE 2008) and the Corps of Engineers Wetland Delineation Manual (1987 Manual) (Environmental Laboratory 1987). Representative sample plots were selected and examined in the field in those areas where wetland jurisdiction was in question or needed to be confirmed. The locations of sample plots and the potential jurisdictional areas are shown on figures in Appendices A and B of the Jurisdictional Delineation. At each sample plot, the dominant and subdominant plant species were identified and their wetland indicator status noted (Reed 1988). A small sample pit (approximately 24 in [0.61 m] deep) was dug at each plot in order to examine soil characteristics and composition. Soil matrix colors were classified according to the Munsell Soil Color Charts (Munsell Color 2000). Hydrological conditions, including any surface inundation, saturated soils, groundwater levels, and/or other wetland hydrology indicators were noted along with site characteristics. Standard data forms were completed for each sample plot; copies of these data forms are included in Appendix C of the Jurisdictional Delineation report. An analysis of the functions and values of each of the drainages is included in Appendix D of the Jurisdictional Delineation Report.

### 2.2.6. Oak Tree Assessment

LSA Associates, Inc. (LSA) biologists (including International Society of Arboriculture [ISA] Certified Arborists) inventoried the oak trees and mapped their locations on an aerial photograph. The LSA team was led by Blake Selna (ISA Certified Arborist No. WE-7397A) and Leo Simone (ISA Certified Arborist No. WE-8491A), assisted by Sara Louwsma, Erin Martinelli, Chris Meloni, Corey Knips, and Matt Teutimez. Field surveys were conducted on February 28–29 and March 27, 2012. When accessible, trees were measured to determine diameter at breast height (DBH) and were tagged with a unique alphanumeric identification (e.g., A-1) inscribed on an aluminum tag. If a tree was not fully accessible due to poison oak

(*Toxicodendron diversilobum*), steep terrain, or the Caltrans right-of-way fence, the DBH was estimated; if a branch could be reached, the tag was wired to the branch. Tree heights were estimated, and general characteristics (e.g., fire damage, broken branches, poor pruning, and bee hives) were noted on the field survey forms. The tree characteristics can be used at the time of impact evaluation to determine the baseline condition of the tree compared to the post-construction condition. This will provide context regarding the severity of impacts.

After the completion of the initial field surveys, the project limits were slightly revised, resulting in slivers of areas that were not surveyed in the field. The trees in those areas were inventoried (estimated) using a combination of web-based aerial photographs (i.e., Google Street View, Bing Bird's Eye [11/2012]) and the project aerial photograph base (Eagle Aerial, 4/2011). Because no additional field surveys were completed, no DBH or general characteristics were recorded, and the trees were not tagged. A copy of the Oak Tree Assessment is included in Appendix I.

## 2.3. Personnel and Survey Dates

Table 2.1 lists the surveys completed and the personnel utilized for the surveys.

**Table 2.1: Surveys Conducted and Personnel Utilized**

| Survey Type | Dates | Consultant Biologist(s) |
|---|---|---|
| Biological Reconnaissance Survey; California Gnatcatcher Habitat Assessment | May 19, 2011 | Ingri Quon |
| Focused Plant Surveys, Vegetation Mapping | May 4 and 18 and June 19 and 29, 2011; September 14 (aerial maps) | Stan Spencer |
| Oak Tree Assessment | February 28–29 and March 27, 2012; October 2012 (office estimate of additional area) | Blake Selna, Leo Simone, Sara Louwsma, Erin Martinelli, Chris Meloni, Corey Knips, Matt Teutimez |
| Focused Arroyo Toad Surveys | April 27; May 4 and 11; and June 9, 15, and 29, 2011 | Ingri Quon, Matt Teutimez, Sara Louwsma |
| Focused Riparian Bird Surveys | May 19 and 29; June 8, 18, and 28; and July 8, 18, and 28, 2011 | Ingri Quon, Matt Teutimez |
| Bat Habitat Suitability Assessment and Surveys | July, August, and September 2011 | Jill Carpenter with Corey Knips, Ingri Quon, Matt Teutimez, Sara Louwsma |
| Jurisdictional Delineation | October 18 and 19; January 19 and 20; and February 29, 2011 | Leo Simone, Erin Martinelli, Matt Teutimez |

## 2.4. Agency Coordination and Professional Contacts

As described above, a list of proposed, threatened, or endangered species potentially occurring within the BSA was generated by the USFWS online IPaC decision support system in response to project information provided on January 23, 2012. This list meets the requirements of Section 7(c) of the Endangered Species Act of 1973, as amended, and is provided in Appendix A.

## 2.5. Limitations That May Influence Results

The collection of biological field data is normally subject to environmental factors that cannot be controlled or reliably predicted. Consequently, the interpretation of field data must be conservative and consider the uncertainties and limitations necessarily imposed by the environment. However, due to the experience and qualifications of the consultant biologists involved in the surveys, this limitation is not expected to substantially influence the results or substantially alter the findings.

Access to private property bordering the Department ROW was prohibited. Therefore, species and vegetation surveys were limited to aural detection and visual observation from the ROW.

Due to the noise levels along SR-74, it is likely that more secretive avian species that would normally be detectable by vocalizations rather than by visual identification were not identified during the wildlife surveys. However, special-status species with the potential to occur within the BSA are evaluated regardless of whether they were observed during surveys.

During the oak tree assessment, some trees were not fully accessible due to the presence of poison oak, steep terrain, or the Department ROW fence. In these instances, the DBH was estimated; if a branch could be reached, the tag was wired to the branch. After the completion of the initial oak tree field surveys, the project limits were revised, resulting in small areas that were not surveyed in the field. The trees in those areas were inventoried (estimated) using a combination of web-based aerial photographs (i.e., Google Street View, Bing Bird's Eye [November 2012]) and the project aerial photograph base (Eagle Aerial [April 2011]). Because no additional field surveys were completed, no DBH or general characteristics were recorded and the trees were not tagged. The trees were given alphanumeric identification similar to the initial survey; however, the standard identifiers were modified with an additional lowercase letter to indicate that they were part of this revised inventory. Locations,

exact tree types, and general characteristics shall be verified by the biological monitor once the construction staking has been completed by the civil surveyor.

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# Chapter 3. Results: Environmental Setting

## 3.1. Description of the Existing Biological and Physical Conditions

As described in *The Jepson Manual* (Hickman, J.C., ed. 1993), the proposed project area is located within the Peninsular Ranges subregion of the Southwestern California region of the California Floristic Province. The Peninsular Ranges subregion is characterized by valleys, small hills, and mountains extending from near the coast inland to include the Santa Ana, Cuyamaca, Santa Rosa, Laguna, and Jacumba Mountain ranges. Much of the area is intensively developed for urban, suburban, and agricultural uses. The natural vegetation of the subregion consists primarily of chaparral, CSS, annual grasslands, riparian scrub and woodland, and some pine forest. Much of the natural vegetation occurs in scattered, often fragmented patches on hills or in other areas not easily developed. Specifically, the proposed project is located east of the City of San Juan Capistrano in unincorporated Orange County, California.

### 3.1.1. Study Area

The project study area begins about 1 mi (1.61 km) east of the City of San Juan Capistrano boundary and lies within the south-central portion of Orange County. The project area length is 2.13 linear miles (3.43 km) (PM 2.93 to PM 5.06) along the SR-74 corridor, with the western part of the project area beginning approximately 1,600 ft (0.30 mi) (487.68 m) east of the SR-74 and La Pata/Antonio Parkway intersection and terminating at the SR-74 and Cristianitos Road intersection. RMV, a private, mixed-use ranch, borders both sides of the SR-74 project area. Ranch land use adjacent to the project area consists of rolling hills occasionally used for grazing with undisturbed areas vegetated with native shrubs and oak woodland with more distant single family homes and an aggregate mine. The project area is located on the USGS *Canada Gobernadora, California* 7.5-minute series topographical quadrangle.

### 3.1.2. Physical Conditions

There are a variety of vegetation communities located within the study area, including CSS, chaparral, coast live oak (*Quercus agrifolia* var. *agrifolia*) woodland, southern cottonwood-willow riparian forest, non-native grassland, and ornamental trees. The riparian communities include coast live oak woodland and southern cottonwood-willow riparian forest.

Elevations range from approximately 280 to 350 ft (85.34 to 106.68 m) amsl across the entire study area. The topography is moderately rolling adjacent to SR-74. Drainages and washes associated with tributaries of San Juan Creek also occur throughout the BSA.

The San Juan Creek watershed covers 134 square miles (347 square kilometers) and includes portions of the cities of Dana Point, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, and San Juan Capistrano. Its main tributary, San Juan Creek, originates in the Santa Ana Mountains district of the Cleveland National Forest in the eastern part of Orange County (P&D, 2003). To the north of the BSA, San Juan Creek flows from the north to the south and comes in closest proximity to the BSA (approximately 100 ft [30.48 m]) at the eastern end of the project alignment.

### 3.1.3. Biological Conditions in the Biological Study Area

The BSA encompasses 19.61 ac. The following sections summarize the principal characteristics, general locations, and total acreages of the vegetation communities, invasive plant species, and general wildlife within the BSA. Appendix J includes the Vegetation Communities Map, which indicate the existing vegetation communities within the BSA. Representative site photographs of the BSA are depicted in Appendix K. Appendix C and Appendix D reference the plant and wildlife species observed, respectively.

#### 3.1.3.1. PLANT COMMUNITIES AND HABITAT TYPES

Seven distinct plant communities were identified within the BSA and are shown in Appendix J. The area (acreage) of each plant community category present within the BSA is provided in Table 3.1.

**Table 3.1: Vegetation Communities Occurring within the BSA**

| Vegetation Community | Total Acres | Total Hectares |
|---|---|---|
| **Scrub and Chaparral Habitats** | | |
| Coastal Sage Scrub | 2.20 | 0.89 |
| Chaparral | 0.75 | 0.30 |
| **Riparian and Woodland Habitats** | | |
| Southern Cottonwood-Willow Riparian Forest | 0.03 | 0.01 |
| Coast Live Oak Woodland | 6.36 | 2.57 |
| **Disturbed Habitats** | | |
| Non-native Grassland | 2.39 | 0.97 |
| Ornamental Trees | 0.16 | 0.06 |
| Developed Areas and Bare Ground | 9.10 | 3.68 |
| **Total** | **21.00** | **8.50** |

### Coastal Sage Scrub

Small patches of CSS are scattered throughout the BSA. Dominant species within this community include California sagebrush (*Artemisia californica*), coyote bush (*Baccharis pilularis*), California buckwheat (*Eriogonum fasciculatum*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), California brickellbush (*Brickellia californica*), stork's bill (*Erodium* spp.), ripgut brome (*Bromus diandrus*), and foxtail chess (*Bromus madritensis*).

### Chaparral

Chaparral occurs primarily in the central portion of the BSA, where it is often bordered by coast live oak woodland. Dominant species within this plant community in the BSA include laurel sumac (*Malosma laurina*), blue elderberry (*Sambucus nigra* ssp. *cerulea*), scrub oak (*Quercus berberidifolia*), California sagebrush, and lemonade berry (*Rhus integrifolia*).

### Southern Cottonwood – Willow Riparian Forest

Southern cottonwood – willow riparian forest occurs in two drainages in the BSA, where it is dominated by arroyo willow (*Salix lasiolepis*), Goodding's willow (*Salix gooddingii*), and blue elderberry. No southern cottonwoods are present within the BSA. However, this plant community was designated based on its inclusion in a larger plant community that extends to include areas adjacent to the BSA.

### Coast Live Oak Woodland

Coast live oak woodland occurs throughout most of the BSA, particularly in areas associated with drainage features. It is dominated by coast live oak (*Quercus agrifolia*), but blue elderberry and scrub oak are also common constituents.

### Nonnative Grassland

Nonnative grassland occurs in disturbed areas throughout the BSA. Dominant plant species in this community within the BSA include tocalote (*Centaurea melitensis*), stork's bill, ripgut brome, foxtail chess, and soft chess (*Bromus hordeaceus*).

### Ornamental Trees

There is one stand of eucalyptus (*Eucalyptus* sp.) in the BSA. Another type of ornamental tree, the Peruvian pepper tree (*Schinus molle*), occurs as individuals in the BSA, but not as stands large enough to map as distinct plant communities.

### *Developed Areas and Bare Ground*

Developed areas and bare ground occur throughout the project alignment as paved and unpaved roads, road shoulders, pullouts, and other areas of compacted soil with little or no vegetation. The existing road shoulder is unvegetated, and soils consist of compacted gravel and compacted sandy loam.

## 3.2. Regional Species and Habitats of Concern

The San Juan Creek Watershed is one of the largest in Southern California, supporting an important aquatic resource and covering over 134 square mi (347 square km). The 29 mi (37 km) long San Juan Creek originates in the Santa Ana Mountains in Riverside County within the Cleveland National Forest and extends west into Orange County before terminating at the Pacific Ocean at Doheny State Park in the City of Dana Point. The area supports a mosaic of native vegetation communities and developed areas. Within the project area, SR-74 passes by open space areas including Ronald W. Caspers Wilderness Park and the private Donna O'Neill Land Conservancy, which is part of RMV, a 40,000 ac (16,187 ha) private ranch. Regional habitats of concern exist in this area and include coast live oak woodland, riparian, and CSS communities. Information based on the literature review for the sensitive species within the BSA is presented below. Additional information for special-status and listed species occurring or having potential to occur within the BSA is provided in Chapter 4.

### 3.2.1. Plants

The BSA supports suitable habitat for a variety of special-status plant species. The project area contains important biological resources within a rural environment. A thorough literature review concluded that a total of 50 special-status plant species have the potential to occur in or near the vicinity of the BSA (Table 3.2). Potentially suitable habitat was found for 24 plant species (Table A, Appendix B). One of the 24 special-status plant species are federal- and/or State-listed endangered, threatened, or candidate species. Further information on all 50 species, including status, habitat requirements, and potential for occurrence, is summarized in Table 3.2.

## Table 3.2: Listed, Proposed, and Special-status Plant Species Identified in the Records Search/Literature Review for the BSA

| Species | Status | Habitat and Distribution | Activity Period | Occurrence Probability |
|---|---|---|---|---|
| *Tortula californica*<br><br>**California screw-moss** | US: –<br>CA: 1B | Moss of sandy soils in chenopod scrub and valley and foothill grassland. Elevations 30 to 4,800 ft (10 to 1,460 m). Known only from Modoc, Kern and western Riverside Counties, California. | Seasonally following rains | **Absent.** Not observed during focused surveys. |
| *Aphanisma blitoides*<br><br>**Aphanisma** | US: –<br>CA: 1B | Sandy or clay soils on slopes or bluffs near the ocean, usually in coastal bluff scrub, coastal dunes, or coastal scrub, below 1,000 ft (305 m) elevation. Known in California from Ventura, Santa Barbara, Los Angeles, Orange, and San Diego Counties. Also occurs in Mexico. | Blooms March through June (annual herb) | **Absent**. Not observed during focused surveys. |
| *Arctostaphylos rainbowensis*<br><br>**Rainbow manzanita** | US: –<br>CA: 1B | Generally in gabbro chaparral in northwestern San Diego and southwestern Riverside Counties at 670 to 2,600 ft (205 to 790 m) elevation. Known only from Riverside and San Diego Counties, California. | Blooms December through March (evergreen shrub) | **Absent.** Out of species' range. |
| *Atriplex coulteri*<br><br>**Coulter's saltbush** | US: –<br>CA: 1B | Alkaline or clay soils in ocean bluffs and ridgetops and alkaline low places in coastal bluff scrub, coastal dunes, coastal sage scrub, and valley and foothill grasslands below 1,500 ft (460 m) elevation. In California, known only from Los Angeles, Orange, Santa Barbara, San Bernardino, San Luis Obispo, Ventura, and San Diego Counties. Also occurs in Mexico. Reports of this species from Riverside County are based on misidentification of *Atriplex serenana* ssp. *davidsonii* (*The Vascular Plants of Western Riverside County, California*. F. M. Roberts et al. 2004). | March through October (perennial herb) | **Absent.** Not observed during focused surveys. |
| *Atriplex pacifica*<br><br>**South Coast saltscale** | US: –<br>CA: 1B | Alkali soils in coastal sage scrub, playas, coastal bluff scrub, coastal dunes, and chenopod scrub below 200 m (600 ft) elevation, and perhaps formerly up to about 1,400 ft (430 m) in Los Angeles County. In California, known from the Channel Islands and mainland Los Angeles, San Diego, and Orange Counties. Also occurs in Mexico. Believed extirpated from Ventura County. | March through October (annual herb) | **Absent.** No alkali soils. |

## Table 3.2: Listed, Proposed, and Special-status Plant Species Identified in the Records Search/Literature Review for the BSA

| Species | Status | Habitat and Distribution | Activity Period | Occurrence Probability |
|---|---|---|---|---|
| | | Reports of this species from Riverside County are based on misidentification of *Atriplex serenana* ssp. *davidsonii* (*The Vascular Plants of Western Riverside County, California*. F. M. Roberts et al., 2004). | | |
| *Baccharis vanessae*<br><br>**Encinitas baccharis** | US: FT<br>CA: SE/1B | Sandstone soils in steep, open, rocky areas in chaparral at 200 to 2,400 ft (60 to 720 m) elevation. Known only from San Diego County, California. | Blooms August through November (deciduous shrub) | **Absent.** Not in species' range. |
| *Brodiaea filifolia*<br><br>**Thread-leaved brodiaea** | US: FT<br>CA: SE/1B | Usually on clay or associated with vernal pools or alkaline flats; occasionally in vernally moist sites in fine soils (clay loam, silt loam, fine sandy loam, loam, loamy fine sand). Typically associated with needlegrass or alkali grassland or vernal pools. Occurs from 80 to 4,000 ft (25 to 1,220 m) elevation. Known only from Los Angeles, Orange, Riverside, San Bernardino, San Diego, and San Luis Obispo Counties, California. | Blooms March through June<br>(perennial herb) | **Absent.** Not observed during focused surveys. |
| *Brodiaea orcuttii*<br><br>**Orcutt's brodiaea** | US: –<br>CA: 1B | Clay and some serpentine soils, usually associated with streams or vernal pools, from 100 to 5,600 ft (30 to 1,700 m) elevation. In California known only from Riverside and San Diego Counties. Also occurs in Mexico. | May through July<br>(perennial herb) | **Absent.** Not observed during focused surveys. |
| *Brodiaea santarosae*<br><br>**Santa Rosa Basalt brodiaea** | US: –<br>CA: 3 | Santa Rosa basalt in grassland at 1,900 to 3,430 ft (580 to 1,045 m) elevation. Known only from Riverside and San Diego Counties, California. | Blooms May through June<br>(perennial herb) | **Absent**. Out of species' range. |
| *Calochortus plummerae*<br><br>**Plummer's mariposa lily** | US: –<br>CA: 1B | Sandy or rocky sites of (usually) granitic or alluvial material in valley and foothill grassland, coastal scrub, chaparral, cismontane woodland, and lower montane coniferous forest at 300 to 5,600 ft (100 to 1,700 m) elevation. Known from the Santa Monica Mountains to San Jacinto Mountains in Riverside, San Bernardino, Orange, Los Angeles, and Ventura Counties, California. | Blooms May through July<br>(perennial herb) | **Absent.** Not observed during focused surveys. |

## Table 3.2: Listed, Proposed, and Special-status Plant Species Identified in the Records Search/Literature Review for the BSA

| Species | Status | Habitat and Distribution | Activity Period | Occurrence Probability |
|---|---|---|---|---|
| *Calochortus weedii* var. *intermedius*<br><br>**Intermediate mariposa lily** | US: –<br>CA: 1B | Dry, open rocky slopes and rock outcrops in chaparral, coastal sage scrub, and grassland at 340 to 2,800 ft (105 to 855 m) elevation. Known only from Los Angeles, Orange, Riverside, and San Bernardino Counties, California. In the western Riverside County area, this species is known from the hills and valleys west of Lake Skinner and Vail Lake (The Vascular Plants of Western Riverside County, California. F. M. Roberts et al., 2004). | May through July (perennial herb) | **Absent.** Not observed during focused surveys. |
| *Centromadia parryi* ssp. *australis*<br><br>**Southern tarplant** | US: –<br>CA: 1B | In vernally wet areas such as edges of marshes and vernal pools, at edges of roads and trails, and in other areas of compacted, poorly drained, or alkaline soils where competition from other plants is limited, often due to disturbance, below 1,400 ft (425 m) elevation. In California, known only from Santa Barbara, Ventura, Los Angeles, Orange and San Diego Counties. Also occurs in Mexico. | May through November (annual herb) | **Absent.** Not observed during focused surveys. |
| *Chaenactis glabriuscula* var. *orcuttiana*<br><br>**Orcutt's pincushion** | US: –<br>CA: 1B | Sandy areas of coastal bluff scrub and coastal sand dunes below 300 ft (100 m) elevation. In California, known only from Los Angeles, Orange (believed extirpated), San Diego, and Ventura Counties. Also occurs in Mexico. | Blooms January through August<br>(annual herb) | **Absent.** Not observed during focused surveys. |
| *Chorizanthe polygonoides* var. *longispina*<br><br>**Long-spined spineflower** | US: –<br>CA: 1B | Generally clay soils in chaparral, coastal sage scrub, and grassland at 100 to 5,000 ft (30 to 1,530 m) elevation. In California, known only from Orange, Riverside, Santa Barbara, and San Diego Counties. Also Occurs in Mexico. | April through July (annual herb) | **Absent**. Not observed during focused surveys. |
| *Comarostaphylis diversifolia* ssp. *diversifolia*<br><br>**Summer holly** | US: –<br>CA: 1B | Chaparral or cismontane woodland at 100 to 2,600 ft (30 to 790 m). In California, known only from Orange, Riverside, and Santa Barbara, and San Diego Counties. Also occurs in Mexico. | April through June (evergreen shrub) | **Absent.** Not observed during focused surveys. |

## Table 3.2: Listed, Proposed, and Special-status Plant Species Identified in the Records Search/Literature Review for the BSA

| Species | Status | Habitat and Distribution | Activity Period | Occurrence Probability |
|---|---|---|---|---|
| *Dodecahema leptoceras*<br><br>**Slender-horned spineflower** | US: FE<br>CA: SE/1B | Occurs at 600 to 2,500 ft (200 to 760 m) elevation. In the Vail Lake area, occurs in gravel soils of Temecula arkose deposits in openings in chamise chaparral. In other areas, occurs in sandy cobbly riverbed alluvium in alluvial fan sage scrub (usually late seral stage), on floodplain terraces and benches that receive infrequent overbank deposits from generally large washes or rivers, where it is most often found in shallow silty depressions dominated by leather spineflower (*Lastarriaea coriacea*) and other native annual species, and is often associated with cryptogamic soil crusts composed of bryophytes, algae and/or lichens. Known only from Los Angeles, Riverside, and San Bernardino Counties, California. | Blooms April through June (annual herb) | **Absent.** Out of species' range. |
| *Dudleya blochmaniae* ssp. *blochmaniae*<br><br>**Blochman's dudleya** | US: –<br>CA: 1B | Dry rocky places, often on clay or serpentine, in chaparral, coastal sage scrub, or grassland, below 1,500 ft (450 m) elevation. In California, known only from Los Angeles, Orange, Santa Barbara, San Diego, San Luis Obispo, and Ventura Counties. Also occurs in Mexico. | May through June (perennial herb) | **Absent.** Not observed during focused surveys. |
| *Dudleya cymosa* ssp. *ovatifolia*<br><br>**Santa Monica Mountains dudleya** | US: FT<br>CA: 1B | Cracks and crevices of rock outcrops and cliff faces (volcanic or sedimentary) in canyons (primarily on north-facing slopes) in chaparral and coastal scrub at 500 to 5,500 ft (150 to 1,700 m) elevation. Known only from Los Angeles and Orange Counties, California. | March through June (perennial herb) | **Absent.** Out of species' range. |
| *Dudleya multicaulis*<br><br>**Many-stemmed dudleya** | US: –<br>CA: 1B | Heavy, often clay soils or around granitic outcrops in chaparral, coastal sage scrub, and grassland below 2,600 ft (790 m) elevation. Known only from Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties. | Blooms April through July (perennial herb) | **Absent.** Not observed during focused surveys. |

## Table 3.2: Listed, Proposed, and Special-status Plant Species Identified in the Records Search/Literature Review for the BSA

| Species | Status | Habitat and Distribution | Activity Period | Occurrence Probability |
|---|---|---|---|---|
| *Dudleya stolonifera*<br><br>**Laguna Beach dudleya** | US: FT<br>CA: ST/1B | Rocky areas in chaparral, coastal sage scrub, cismontane woodland, and grassland at 30 to 850 ft (10 to 260 m) elevation. Known only from Orange County, California near Laguna Beach. | Blooms May through July (perennial herb) | **Absent.** Out of species' range. |
| *Dudleya viscida*<br><br>**Sticky dudleya** | US: –<br>CA: 1B | Rocky areas in coastal bluff scrub, chaparral, coastal sage scrub, and cismontane woodland from 30 to 1,800 ft (10 to 550 m) elevation. Known only from Orange and San Diego Counties, California. | May through June (perennial herb) | **Absent.** Not observed during focused surveys. |
| *Eryngium pendletonensis*<br><br>**Pendleton button-celery** | US: –<br>CA: 1B | Vernally mesic sites in coastal bluff scrub, valley and foothill grassland, and vernal pools at 50 to 360 ft (15 to 110 m) elevation. Known only from San Diego County. | April through June (perennial herb) | **Absent.** Not observed during focused surveys. |
| *Euphorbia misera*<br><br>**Cliff spurge** | US: –<br>CA: 2 | Rocky sites within coastal bluff scrub, coastal sage scrub, and Mojavean desert scrub at 30 to 1,600 ft (10 to 500 m) elevation. In California, known only from the Channel Islands, coastal Orange and San Diego Counties, and Riverside County deserts. Also occurs in Mexico. | December through August (perennial herb) | **Absent.** Not observed during focused surveys. |
| *Harpagonella palmeri*<br><br>**Palmer's grapplinghook** | US: –<br>CA: 4 | Clay soils in openings in coastal sage scrub, juniper woodland, and grassland below 2,700 ft (830 m) elevation. In California, known only from Orange, Riverside, and San Diego Counties and the Channel Islands. Also occurs in Arizona and Mexico. | March through May (annual herb) | **Absent.** Not observed during focused surveys. |
| *Hesperocyparis* (*Callitropsis, Cupressus*) *forbesii*<br><br>**Tecate cypress** | US: –<br>CA: 1B | Evergreen tree found in closed-cone coniferous forest and chaparral at elevations from 800 to 5,000 ft (255 to 1,500 m). In California, known from Orange and San Diego Counties. Trees known from Riverside County are planted. Also occurs in Mexico. | Year-round (evergreen tree) | **Absent.** Out of species' range. |
| *Hordeum intercedens*<br><br>**Vernal barley** | US: –<br>CA: 3 | Vernal pools and saline flats and depressions below 3,300 ft (1,000 m) elevation. Known from many California Counties. Also occurs in Mexico. | March through June (annual herb) | **Absent.** No vernal pools or saline areas. |

## Table 3.2: Listed, Proposed, and Special-status Plant Species Identified in the Records Search/Literature Review for the BSA

| Species | Status | Habitat and Distribution | Activity Period | Occurrence Probability |
|---|---|---|---|---|
| *Horkelia cuneata* ssp. *puberula*<br><br>**Mesa horkelia** | US: –<br>CA: 1B | Sandy or gravelly soils in chaparral, or rarely in cismontane woodland or coastal scrub at 200 to 2,700 ft (70 to 825 m) elevation. Known only from San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Bernardino Counties, California. Believed extirpated from Riverside and San Diego Counties. | February through September (perennial herb) | **Absent.** Not observed during focused surveys. |
| *Horkelia truncata*<br><br>**Ramona horkelia** | US: –<br>CA: 1B | Clay soils in chaparral and woodland; 1,000 to 4,900 ft (300 to 1,500 m) elevation. Known from Peninsular Ranges in San Diego County and from Baja California. | May through June | **Absent.** Out of species' range. |
| *Imperata brevifolia*<br><br>**California satintail** | US: -<br>CA: 2 | Desert seeps, springs, moist canyons, canals, irrigation ditches, alkaline sinks, and wet areas at 0 to 1,600 ft (0 to 500 m) elevation. Widespread in California and the western U. S. Also occurs in Mexico. | Blooms September through May (perennial grass) | **Absent.** No suitable wet areas. |
| *Lepechinia cardiophylla*<br><br>**Heart-leaved pitcher sage** | US: –<br>CA: 1B | Closed cone coniferous forest, chaparral, cismontane woodland; 1,800 to 4,500 ft (550 to 1,370 m) elevation; Santa Ana Mountains in Riverside and Orange Counties. Also reported from San Diego County and Baja California. | Blooms April through July (perennial herb) | **Absent.** Out of species' range. |
| *Lepidium virginicum* var. *robinsonii*<br><br>**Robinson's pepper-grass** | US: –<br>CA: 1B | Dry soils in coastal sage scrub and chaparral below 2,900 ft (885 m) elevation. In California, known only from Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino and San Diego Counties, and Santa Cruz Island. Also occurs in Mexico. | January through July (annual herb) | **Absent.** Not observed during focused surveys. |
| *Lilium parryi*<br><br>**Lemon lily** | US: –<br>CA: 1B | Bulbiferous perennial herb of wet areas in meadows and riparian and montane coniferous forests at 4,000 to 9,200 ft (1,220 to 2,790 m) elevation. In California, known from Los Angeles, Riverside, San Bernardino, and San Diego Counties. Also occurs in Arizona and Mexico. | Blooms July through August (perennial herb) | **Absent.** Out of species' range. |

## Table 3.2: Listed, Proposed, and Special-status Plant Species Identified in the Records Search/Literature Review for the BSA

| Species | Status | Habitat and Distribution | Activity Period | Occurrence Probability |
|---|---|---|---|---|
| *Lycium brevipes* var. *hassei*<br><br>**Santa Catalina Island desert-thorn** | US: –<br>CA: 1B | Deciduous shrub of coastal bluffs and slopes in coastal bluff scrub and coastal scrub at 30 to 1,000 ft (10 to 300 m) elevation. Known only from the Channel Islands (extirpated), one location on the Palos Verdes Peninsula in Los Angeles County, and one location in Orange County. | Blooms in June<br>(deciduous shrub) | **Absent.** Not observed during focused surveys. |
| *Monardella hypoleuca* ssp. *lanata*<br><br>**Felt-leaved monardella** | US: –<br>CA: 1B | Chaparral and cismontane woodland from 1,000 to 5,200 ft (300 to 1,575 m) elevation. Known from Peninsular Ranges in Orange and San Diego Counties and from northern Baja California. | Blooms June through August | **Absent.** Out of species' range. |
| *Monardella macrantha* ssp. *hallii*<br><br>**Hall's monardella** | US: –<br>CA: 1B | Dry slopes and ridges in openings in chaparral, woodland, and forest at 2,280 to 7,200 ft (695 to 2,195 m) elevation. Known only from Los Angeles, San Diego, Orange, Riverside, and San Bernardino Counties, California. In the western Riverside County area, known only from higher elevations in the Santa Ana and Aqua Tibia Mountains (*The Vascular Plants of Western Riverside County, California*. F. M. Roberts et al., 2004). | June through August (October)<br>(perennial herb) | **Absent.** Out of species' range. |
| *Myosurus minimus* ssp. *apus*<br><br>**Little mousetail** | US: –<br>CA: 3 | Alkaline areas in vernal pools at 70 to 2,100 ft (20 to 640 m) elevation. In California, known only from the Central Valley of the coastal and inland areas of Southern California. Also occurs in Oregon and Mexico. | Blooms March through June<br>(annual herb) | **Absent.** No alkaline areas. |
| *Nama stenocarpum*<br><br>**Mud nama** | US: –<br>CA: 2 | Lake shores, riverbanks, and similar intermittently wet areas at 20 to 1,600 ft (5 to 500 m) elevation. Known in California from San Diego, Orange, and Riverside Counties and from San Clemente Island. Believed extirpated from Los Angeles and Imperial Counties. Known also from Baja California and Arizona. | Blooms January through July<br>(annual or perennial herb) | **Absent.** No suitable wet areas. |

## Table 3.2: Listed, Proposed, and Special-status Plant Species Identified in the Records Search/Literature Review for the BSA

| Species | Status | Habitat and Distribution | Activity Period | Occurrence Probability |
|---|---|---|---|---|
| *Navarretia prostrata*<br><br>**Prostrate vernal pool navarretia** | US: –<br>CA: 1B | Vernal pools, usually alkaline, from 50 to 4,000 ft (15 to 1,210 m) elevation. Known only from Alameda, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, San Benito, San Diego San Luis Obispo, and possibly San Bernardino Counties, California. | Blooms April through July (annual herb) | **Absent.** No vernal pools or similar habitats. |
| *Nolina cismontana*<br><br>**Chaparral nolina** | US: –<br>CA: 1B | Sandstone or gabbro in chaparral and coastal sage scrub at 500 to 4,200 ft (140 to 1,275 m) elevation. Known from Orange, Riverside, San Diego, and Ventura Counties, California. | Blooms May through July (perennial shrub) | **Absent.** Out of species' range. |
| *Pentachaeta aurea ssp. allenii*<br><br>**Allen's daisy** | US: –<br>CA: 1B | Grasslands and openings in coastal scrub from 250 to 1,700 ft (75 to 520 m) elevation. Known only from Orange County, California. | March through June (annual herb) | **Absent.** Not observed during focused surveys. |
| *Phacelia suaveolens* ssp. *keckii*<br><br>**Santiago Peak phacelia** | US: –<br>CA: 1B | Closed-cone coniferous forest and chaparral in elevations from 1,800 to 5,200 ft (545 to 1,600 m). Known from Orange and Riverside Counties, California. In the western Riverside County area, this species is scarce and known from higher elevations in the Santa Ana Mountains, Agua Tibia Mountains, and Arroyo Seco Creek (*The Vascular Plants of Western Riverside County, California*. F. M. Roberts et al., 2004). | Blooms May through June(annual herb) | **Absent.** Out of species' range. |
| *Pseudognaphalium leucocephalum*<br><br>**White rabbit-tobacco** | US: –<br>CA: 2 | Sandy and gravelly creek bottoms of the coastal slope below 6,900 ft (2,100 m) elevation. Known in California from Los Angeles, Orange, Riverside, Santa Barbara, San Diego, San Luis Obispo and Ventura Counties. Also known from Arizona, New Mexico, Texas and Mexico. | Generally blooms August through November (perennial herb) | **Absent.** No sandy or gravelly creek bottoms. |

## Table 3.2: Listed, Proposed, and Special-status Plant Species Identified in the Records Search/Literature Review for the BSA

| Species | Status | Habitat and Distribution | Activity Period | Occurrence Probability |
|---|---|---|---|---|
| *Quercus dumosa*<br><br>**Nuttall's scrub oak** | US: -<br>CA: 1B | On sandy and clay loam soils near the coast within closed-cone coniferous forest, chaparral, and coastal scrub from 50 to 1,300 ft (15 to 400 m) elevation. In California, known only from western Orange, Santa Barbara, and San Diego Counties. Also known from Baja California. | Year-round (evergreen shrub) | **Absent.** Not observed during focused surveys. |
| *Satureja chandleri*<br><br>**San Miguel savory** | US: –<br>CA: 1B | Rocky areas in chaparral or oak woodland or at the margins these communities in coastal sage scrub or grassland, at 400 to 4,000 ft (110 to 1,210 m) elevation. Prefers moist rocky canyons with trees or large shrubs. Known only from Orange, Riverside, and San Diego Counties, and Baja California, Mexico. | Blooms March through May<br>(perennial herb) | **Absent.** Not observed during focused surveys. |
| *Senecio aphanactis*<br><br>**Rayless ragwort** | US: –<br>CA: 2 | Openings (especially alkaline flats) in cismontane woodland, coastal sage scrub, and chaparral at 50 to 1,900 [2,600?] ft (15 to 575 (800?) m) elevation. Known in California from Alameda, Contra Costa, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, Santa Barbara, Santa Clara, San Diego, San Luis Obispo, Solano, and Ventura Counties. Also occurs in Baja California. | Blooms January through April<br>(annual herb) | **Absent.** Not observed during focused surveys. |
| *Sidalcea neomexicana*<br><br>**Salt spring checkerbloom** | US: –<br>CA: 2 | Alkaline springs and brackish marshes below 5,000 ft (1,530 m) elevation. In California, known only from Kern, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. Believed extirpated from Los Angeles County. Also known from Arizona, New Mexico, Nevada, Utah, and Mexico. | Blooms March through June<br>(perennial herb) | **Absent.** No alkaline springs or marshes. |
| *Suaeda esteroa*<br><br>**Estuary seablite** | US: –<br>CA: 1B | Coastal salt marshes below 15 ft (5 m) elevation. Occurs along immediate coast from Santa Barbara County to Baja California. | Blooms May through October (January)<br>(perennial herb) | **Absent.** Out of species' range. |

## Table 3.2: Listed, Proposed, and Special-status Plant Species Identified in the Records Search/Literature Review for the BSA

| Species | Status | Habitat and Distribution | Activity Period | Occurrence Probability |
|---|---|---|---|---|
| *Tetracoccus dioicus*<br><br>**Parry's tetracoccus** | US: –<br>CA: 1B | Dry stony slopes in chaparral and coastal sage scrub at 500 to 3,300 ft (165 to 1,000 m) elevation. Known in California only from Orange, Riverside, and San Diego Counties. Also occurs in Mexico. | Blooms April through May (perennial deciduous shrub) | **Absent.** Out of species' range. |
| *Verbesina dissita*<br><br>**Big-leaved crown-beard** | US: FT CA: ST/1B | Steep, rocky, primarily north-facing slopes with gravelly soils at 150 to 700 ft (45 to 210 m) elevation within 1.5 mi (2.41 km) of the ocean, usually associated with maritime chaparral and coastal sage scrub. Known only from Orange County and Baja California. | Blooms April through July (perennial herb) | **Absent.** Out of species' range. |
| *Viguiera purisimae*<br><br>**La purisima viguera** | US: –<br>CA: 2 | Dry, rocky places in coastal bluff scrub and chaparral at 1,200 to 1,400 ft (365 to 425 m) elevation. Known in California only from Camp Pendleton in San Diego County. Also occurs in Mexico. | Blooms April through September (shrub) | **Absent.** Out of species' range. |

***CNPS R-E-D Code:***

***Rarity***

*1 – Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time*
*2 – Distributed in a limited number of occurrences, occasionally more if each occurrence is small*
*3 – Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported*

***Endangerment***

*1 – Not very endangered in California*
*2 – Fairly endangered in California*
*3 – Seriously endangered in California*

***Distribution***

*1 – More or less widespread outside California*
*2 – Rare outside California*
*3 – Endemic to California*

***California Native Plant Society (CNPS) designations:***

*List 1A: Plants presumed extinct in California*
*List 1B: Plants rare and endangered in California and throughout their range*
*List 2: Plants rare, threatened or endangered in California but more common elsewhere in their range.*
*List 3: Plants needing more information (a review list).*
*List 4: Plants of limited distribution (a watch list).*

BSA = Biological Study Area

### 3.2.2. Wildlife

The BSA supports suitable habitat for a variety of special-status wildlife species. After a thorough literature review, it was determined that 62 special-status wildlife species have the potential to occur within the BSA. A total of 9 of these species are listed as federal- and/or State-listed endangered or threatened, or proposed endangered or threatened. In addition, three of these species are considered Fully Protected species by the State of California. Further information on these species, including status, habitat requirements, and potential for occurrence, is summarized in Table 3.3.

### 3.2.3. Wildlife Migration and Travel Corridors

Wildlife movement and habitat fragmentation are important issues in assessing project effects to wildlife because the spatial relationship of food, water, and cover is of importance for animal species. Large areas of habitat or narrower habitat between expanses of open space provide linkages and corridors for wildlife movement, which includes seasonal migration as well as daily movements for foraging or pollinator dispersal, which is of importance for many plant species.

The BSA is surrounded by rolling hills with woodland and scrub habitats, lowland pasture land/grassland, and densely vegetated tributaries to nearby San Juan Creek. Open pasture and grassland habitats will be used by some migrant and resident bird species for foraging as they move from one habitat area to another. In addition, linear riverine habitat types are associated with the BSA tributaries and include oak woodland, willow woodland, and willow scrub, all of which are considered high-quality wildlife habitats because they provide protective cover during movement as well as water and food for many species.

## Table 3.3: Listed, Proposed, and Special-status Wildlife Species Identified in the Records Search/Literature Review for the BSA

| Common Name | Scientific Name | Status Listing | Habitat and Comments | Habitat Present/ Absent | Rationale |
|---|---|---|---|---|---|
| **FISH** | | | | | |
| Tidewater goby | *Eucyclogobius newberryi* | Fed: FE<br>CA: CSC | Brackish water habitats along the California coast from Agua Hedionda lagoon (San Diego County) to the mouth of the Smith River (Del Norte County). Found in shallow lagoons and lower stream reaches. | A | Suitable habitat is absent from the BSA. |
| Arroyo chub | *Gila orcuttii* | Fed: None<br>CA: CSC | Perennial streams or intermittent streams with permanent pools; slow water sections of streams with mud or sand substrates; spawning occurs in pools. Native to Los Angeles, San Gabriel, San Luis Rey, Santa Ana, and Santa Margarita River systems; introduced in Santa Ynez, Santa Maria, Cuyama, and Mojave River systems and smaller coastal streams. | A | Suitable habitat is absent from the BSA. Known occurrences from San Juan Creek, north of the BSA. |
| Southern steelhead - South/Central California | *Oncorhynchus mykiss irideus* | Fed: FT<br>CA: SA | Federal listing refers to runs in coastal basins from the Pajaro River south to, but not including, the Santa Maria River. | A | Suitable habitat is absent from the BSA. |
| Santa Ana speckled dace | *Rhinichthys osculus ssp. 3* | Fed: None<br>CA: CSC | Found in the headwaters of the Santa Ana and San Gabriel River drainages. Found in riffles in small streams and shore areas with abundant gravel and rock. | A | Suitable habitat is absent from the BSA. Outside the known range. |
| **AMPHIBIANS** | | | | | |
| Arroyo toad | *Anaxyrus (Bufo) californicus* | Fed: FE<br>CA: CSC | Washes and arroyos with open water; sand or gravel beds; for breeding, pools with sparse overstory vegetation. Coastal and a few desert streams from Monterey County to Baja California. | HP, CH, O | Breeding season surveys were positive in San Juan Creek in 2011. The entire BSA is within or immediately adjacent to Critical Habitat for arroyo toad. Upland habitat is present. |
| Western spadefoot | *Scaphiopus hammondii* | Fed: None<br>CA: CSC | Occurs in grassland habitats, but can be found in valley-foothill hardwood woodlands. Requires vernal pools for breeding. Found in elevations from sea level to 4,500 ft (1,371.6 m) from Great Valley and Coast Ranges south to northwest Baja California. | HP | Suitable habitat is present within the BSA. Known occurrence is within 2 mi (3.22 km) of the BSA. |

## Table 3.3: Listed, Proposed, and Special-status Wildlife Species Identified in the Records Search/Literature Review for the BSA

| Common Name | Scientific Name | Status Listing | Habitat and Comments | Habitat Present/ Absent | Rationale |
|---|---|---|---|---|---|
| Coast range newt | *Taricha torosa torosa* | Fed: None CA: CSC | Occurs in the coast ranges from central Mendocino County south to northern San Diego County. Found primarily in valley-foothill hardwood, coastal scrub and mixed chaparral. Breeds in ponds, reservoirs, or slow-moving streams. | HP | Suitable habitat is present within the BSA. |
| **REPTILES** | | | | | |
| Southwestern pond turtle | *Actinemys marmorata pallida* | Fed: None CA: CSC | Inhabits permanent or nearly permanent water below 6,000 ft (1,830 m) from central California, west of the Sierra-Cascade crest south to north-western Baja California. Absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries. Requires basking sites such as partially submerged logs, rocks, or open mud banks. | HP, P | If species is present in San Juan Creek, suitable upland habitat is present within the BSA. Species is known from the vicinity. |
| Orange-throated whiptail | *Aspidoscelis hyperythra* | Fed: None CA: CSC | Prefers washes and other sandy areas with patches of brush and rocks, in chaparral, coastal sage scrub, juniper woodland, and oak woodland from sea level to 3,000 ft (915 m) elevation. Perennial plants required. Occurs in Riverside, Orange, San Diego Counties west of the crest of the Peninsular Ranges, in extreme southern San Bernardino County near Colton, and in Baja California. | HP | Suitable habitat is present within the BSA. Records show observations within 0.25 mi (0.40 km) north of the BSA. |
| Coastal western whiptail | *Aspidoscelis tigris stejnegeri* | Fed: None CA: CSA | Wide variety of habitats including coastal sage scrub, sparse grassland, and riparian woodland; coastal and inland valleys and foothills; Ventura County to Baja California. | HP | Suitable habitat within the BSA is present. Records show one observation within 5 mi (8.04 km) of the BSA in Bell Canyon. |
| Silvery legless lizard | *Anniella pulchra pulchra* | Fed: None CA: CSC | Inhabits loose soil and humus. Found predominantly in the Coast Ranges, Transverse Mountains, and Peninsular Ranges and in northwest Baja California. | HP | Suitable habitat is present within the BSA. |
| Rosy boa | *Charina trivirgata* | Fed: None CA: CSA | In rocky areas in chaparral or scrub habitats or immediately adjacent oak woodland; also in rocky riparian areas. Found in Los Angeles County, southwestern San Bernardino County, south through western Riverside County and San Diego County into Baja California | HP | Suitable habitat is marginal within the BSA. Records show one observation over 10 mi (16.09 km) northeast of SR-74 in Holy Jim Canyon. |

## Table 3.3: Listed, Proposed, and Special-status Wildlife Species Identified in the Records Search/Literature Review for the BSA

| Common Name | Scientific Name | Status Listing | Habitat and Comments | Habitat Present/ Absent | Rationale |
|---|---|---|---|---|---|
| San Diego banded gecko | *Coleonyx variegatus abbotti* | Fed: None CA: CSA | Often associated with rocks. Coastal sage scrub and chaparral, most often on granite or rocky outcrops in these habitats. Interior Ventura County south. | HP | Suitable habitat within the BSA is marginal. There are no CNDDB records within 5 mi (8.04 km) of the BSA, but species is known from farther up San Juan Creek. |
| Red diamond rattlesnake | *Crotalus ruber* | Fed: None CA: CSC | Associated with chaparral, woodland, grassland and desert communities from Morongo Valley in San Bernardino and Riverside Counties to the west and south into Baja California. Prefers rocky areas with dense vegetation. Needs rodent burrows, cracks in rocks, or surface cover objects for shelter. | HP | Suitable habitat is present within the BSA. Known occurrence within 1 mi (1.61 km) of the BSA. Nearest record is approximately 0.25 mi (0.40 km) south of SR-74. |
| San Diego ringneck snake | *Diadophis punctatus similis* | Fed: None CA: CSA | Under cover of rocks, wood, bark, boards, and other surface debris in a variety of habitats. Prefers moist habitats of coastal San Diego County, northern Baja California and southwestern San Bernardino County. | HP | Suitable habitat is present within the BSA. |
| California mountain kingsnake (San Diego population) | *Lampropeltis zonata (pulchra)* | Fed: None CA: CSC | Wooded habitats west of the deserts, Los Angeles to San Diego Counties. | HP | Habitat within the BSA is marginally suitable. There are no CNDDB records within 5 mi (8.04 km) of the BSA. |
| Coast horned lizard | *Phrynosoma blainvillei* | Fed: None CA: CSC | Primarily in sandy soil in open areas, especially washes and floodplains, in many plant communities. Requires open areas for sunning, bushes for cover, patches of loose soil for burial, and an abundant supply of ants or other insects. Occurs west of the deserts from northern Baja California north to Shasta County below 2,400 m (8,000 ft) elevation. | HP | Suitable habitat within the BSA is degraded and marginal. Records show several observations within 2 mi (3.22 km) of the BSA. Nearest observation area is within 1 mi (1.61 km) north of SR-74. |
| Coronado Island skink | *Plestiodon skiltonianus interparietalis* | Fed: None CA: CSC | Occurs in variety of plant communities including coastal sage, mesic chaparral, oak woodlands, pinyon-juniper, and riparian woodlands to pine forests. Found west of the deserts from Riverside County to Baja California. | HP | Suitable habitat is present within the BSA. No known occurrences within the vicinity of the BSA. |
| Coast patch-nosed snake | *Salvadora hexalepis virgultea* | Fed: None CA: CSC | Occupies desert scrub, coastal chaparral, washes, sandy flats, and rocky areas. Ranges from sea level to 2,133.6 m (7,000 ft) from the central coast south to northwest Baja California. | HP | Suitable habitat within the BSA is marginal. There are no CNDDB records within 5 mi (8.04 km) of the BSA. |

## Table 3.3: Listed, Proposed, and Special-status Wildlife Species Identified in the Records Search/Literature Review for the BSA

| Common Name | Scientific Name | Status Listing | Habitat and Comments | Habitat Present/ Absent | Rationale |
|---|---|---|---|---|---|
| Two-striped garter snake | *Thamnophis hammondii* | Fed: None CA: CSC | Highly aquatic. Found in or near permanent fresh water. Often along streams with rocky beds and riparian growth. | A | Suitable habitat is absent from the BSA. Records show one observation within 2 mi (3.22 km) of the BSA. Expected in San Juan Creek (LSA observation). |
| **BIRDS** | | | | | |
| Tricolored blackbird | *Agelaius tricolor* | Fed: None CA: CSC (nesting colony) | Highly colonial. Most numerous in the central valley, largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony. | A | Suitable nesting habitat is lacking, but foraging habitat is present within the BSA in the grassland areas. |
| Southern California rufous-crowned sparrow | *Aimophila ruficeps canescens* | Fed: None CA: CSA | Resident in Southern California CSS and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches. | HP | Suitable habitat is present within the BSA. No known occurrences are within the vicinity of the BSA. |
| Grasshopper sparrow | *Ammodramus savannarum* | Fed: None CA: CSC (nesting) | In southern California, grasslands, agricultural fields, prairie, old fields and open savanna. Uncommon and very local summer resident on grassy slopes and mesas west of the deserts | HP | Suitable habitat is marginal within the BSA. No known occurrences are within the vicinity of the BSA. |
| Golden eagle | *Aquila chrysaetos* | Fed: None CA: CFP | Uncommon, permanent resident and migrant throughout most of California. Occurs typically in rolling foothills, mountain areas, sage-juniper flats, and desert habitats. | A | Suitable nesting habitat is absent from the BSA. |
| Long-eared owl | *Asio otus* | Fed: None CA: CSC (nesting) | Nests in riparian areas with tall willows and cottonwoods as well as belts of live oak woodlands occurring adjacent to streams. Requires adjacent open land for foraging and utilizes old nests of crows, hawks, or magpies for breeding. | A | Suitable habitat is present within the BSA, but the proximity to human activity makes it unsuitable. Known occurrences are within 3 mi (4.82 km) of the BSA. Historical records exist outside of the BSA 3 mi (4.82 km) northeast. |
| Burrowing owl | *Athene cunicularia* | Fed: None CA: CSC (burrow sites) | Burrows in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel. | HP | Suitable habitat is present within the BSA. Known occurrences are within 2 mi) (3.22 km) south of the BSA. |

## Table 3.3: Listed, Proposed, and Special-status Wildlife Species Identified in the Records Search/Literature Review for the BSA

| Common Name | Scientific Name | Status Listing | Habitat and Comments | Habitat Present/ Absent | Rationale |
|---|---|---|---|---|---|
| Ferruginous hawk | *Buteo regalis* | Fed: None CA: CSA (wintering) | Forages in open fields, grasslands and agricultural areas, sagebrush flats, desert scrub, fringes of pinyon-juniper habitats, and other open country in western North America. Requires large, open tracts of grasslands, sparse shrub, or desert habitats. | HP | Suitable foraging habitat for this species is present on site. No known occurrences are within the vicinity of the BSA. |
| Merlin | *Falco columbarius* | Fed: None CA: CSA (wintering) | Frequents several habitats, including CSS and annual grassland. Forages along the coast and in montane valleys and open deserts with scattered clumps of trees. Rare fall migrant and winter visitor to Southern California. | HP | Suitable habitat is present within the BSA. |
| San Diego cactus wren | *Campylorhynchus brunneicapillus sandiegensis* | Fed: None CA: CSC | Occurs in Southern California CSS habitats. Requires mature *Opuntia* cactus for nesting and roosting. | A | Suitable habitat is absent from the BSA. Known occurrences from within 0.25 mi (0.40 km) of the BSA. |
| Western snowy plover | *Charadrius alexandrinus nivosus* | Fed: FT CA: CSC (nesting) | Sandy coastal beaches, lakes, alkaline playas. Scattered locations along coastal California and Channel Islands, inland at Salton Sea and at various alkaline lakes. | A | Suitable habitat is absent from the BSA. Not expected. |
| Northern harrier | *Circus cyaneus* | Fed: None CA: CSC (nesting) | Grassland and marshy habitats in Southern California. Uncommonly in open desert and brushlands. | HP | Suitable habitat is present within the BSA, but proximity to the roadway make is unsuitable for nesting. |
| White-tailed kite | *Elanus leucurus* | Fed: None CA: CFP | Nests in riparian trees such as oaks, willows, and cottonwoods in lower-elevation areas, particularly the coastal valleys and plains of Orange and San Diego Counties. | HP | Suitable habitat for this species is present throughout the BSA. Known occurrence is at the west end of the BSA. |
| Southwestern willow flycatcher | *Empidonax traillii extimus* | Fed: FE CA:SE (nesting) | Breeds and nests in riparian forest with dense understory. Rare and localized in Southern California. | A | Suitable riparian habitat for this species is poor due to lack of surface water. Known occurrences from San Juan Creek, north of the BSA. Not detected during 2011 focused least Bell's vireo surveys. |
| California horned lark | *Eremophila alpestris actia* | Fed: None CA: CSA | Occurs in open grasslands, farmlands, prairies, tundras, airports, beaches, golf courses, cemeteries, and parks. | HP | Suitable habitat marginal within the BSA. No known occurrences are within the vicinity of the BSA. |

## Table 3.3: Listed, Proposed, and Special-status Wildlife Species Identified in the Records Search/Literature Review for the BSA

| Common Name | Scientific Name | Status Listing | Habitat and Comments | Habitat Present/ Absent | Rationale |
|---|---|---|---|---|---|
| Yellow-breasted chat | *Icteria virens* | Fed: None CA: CSC (nesting) | Summer resident of California. Inhabits riparian thickets of willow and other brushy tangles near water. Nests in low, dense vegetation consisting of willow, blackberry, and wild grape. | HP | Suitable habitat marginal within the BSA. Detected several hundred feet outside of the BSA during surveys conducted in 2011. |
| Coastal California gnatcatcher | *Polioptila californica californica* | Fed: FT CA: CSC | Obligate, permanent resident of CSS below 2,500 ft (762 m) in Southern California. | HP | Suitable habitat is lacking (limited size) within the BSA. Known occurrences are within 1 mi (1.61 km) north and south of the BSA. Focused surveys not conducted due to lack of habitat size. |
| Least Bell's vireo | *Vireo bellii pusillus* | Fed: FE CA: SE (nesting) | Occurs in moist thickets and riparian areas that are predominantly composed of willow and mulefat. | HP | Suitable habitat for this species is present adjacent to the BSA, but is marginal. Known occurrences are within San Juan Creek and Canada Gobernadora Creek in the vicinity of the BSA. Not observed during 2011 focused surveys. |
| Costa's hummingbird | *Calypte costae* | Fed: None CA: CSA (nesting) | Found primarily in deserts, arid brushy foothills, and chaparral in Southern California. Wanders widely. | HP | Suitable habitat for this species is present on site. |
| Allen's hummingbird | *Selasphorus sasin* | Fed: None CA: CSA (nesting) | Nests in residential areas, chaparral, open oak woodland, and riparian woodland in coastal areas the length of California. Generally restricted to exotic vegetation in urban areas in winter. | HP | Suitable habitat for this species is present on site. |
| Nuttall's woodpecker | *Picoides nuttallii* | Fed: None CA: CSA (nesting) | Oak, pine-oak, and riparian woodland in California and northwestern Baja California. | HP, O | Suitable habitat for this species is present on site. Observed during the 2011 surveys. |
| Loggerhead shrike | *Lanius ludovicianus* | Fed: None CA: CSC (nesting) | Found in open fields with scattered trees, open woodland, and scrub. Declining throughout Southern California. | HP | Suitable habitat for this species is present on site and in the vicinity. No known occurrences are within the vicinity of the BSA. |
| Oak titmouse | *Baeolophus inornatus* | Fed: None CA: CSA (nesting) | Common resident of much of California, primarily in oak woodland. Also inhabits oak-conifer and riparian woodland and pinyon-juniper associations. | HP, O | Suitable habitat for this species is present on site. Observed during the 2011 surveys. |

## Table 3.3: Listed, Proposed, and Special-status Wildlife Species Identified in the Records Search/Literature Review for the BSA

| Common Name | Scientific Name | Status Listing | Habitat and Comments | Habitat Present/ Absent | Rationale |
|---|---|---|---|---|---|
| Yellow warbler | *Dendroica petechia brewsteri* | Fed: None CA: CSC (nesting) | Riparian woodlands of coastal lowland and foothill canyons and across the foothills of the Transverse Ranges. Riparian areas are exclusively used for nesting. Migrants belonging to other subspecies are widespread and common. | HP | Suitable habitat for this species is present within the BSA, but is marginal. |
| Lark sparrow | *Chondestes grammacus* | Fed: None CA: CSA (nesting) | Found in open habitats with scattered bushes or trees. Breeds throughout much of western North America and winters from the southern U.S. to southern Mexico. | HP | Suitable habitat is present within the BSA. No known occurrences are within the vicinity of the BSA. |
| Bell's sage sparrow | *Amphispiza belli belli* | Fed: None CA: CSA | Frequents low, fairly dense stands of shrubs within CSS or chaparral habitat. | HP | Suitable habitat is present within the BSA, but is marginal. No known occurrences are within the vicinity of the BSA. |
| Lawrence's goldfinch | *Carduelis lawrencei* | Fed: None CA: CSA (nesting) | Found in oak woodland, chaparral, riparian woodland, and other habitats in arid regions, but usually near water. Occurs from Northern California to northern Baja California, but periodically wanders throughout much of western North America. | HP | Suitable habitat is present within the BSA. No known occurrences are within the vicinity of the BSA. |
| **MAMMALS** | | | | | |
| Pallid bat | *Antrozous pallidus* | Fed: None CA: CSC | Occurs in grassland, shrublands, woodlands, and forests; requires rocky outcrops, cliffs, and crevices with access to open habitats for foraging. | HP | Suitable habitat is present within the BSA. Not observed during the 2011 field surveys. |
| Ringtail | *Bassariscus astutus* | Fed: None CA: CFP | Woody and rocky areas of the southwestern U.S. and most of Mexico. | HP | Suitable habitat is present within the BSA. |
| Dulzura pocket mouse | *Chaetodipus californicus femoralis* | Fed: None CA: CSC | Found in a variety of habitats including coastal sage scrub, chaparral and grassland in northern Baja California, San Diego and extreme southwestern and western Riverside Counties. Limit of range to northwest (at interface with C. c. dispar) unclear. | HP | Suitable habitat is present within the BSA. |
| Northwestern San Diego pocket mouse | *Chaetodipus fallax fallax* | Fed: None CA: CSC | Occurs in coastal scrub, chaparral, grasslands, sagebrush, and in western San Diego County. Requires sandy, herbaceous areas, usually in association with rocks or coarse gravel. | HP | Suitable habitat for this species is present on site, but is marginal. No known occurrences are within the vicinity of the BSA. |

## Table 3.3: Listed, Proposed, and Special-status Wildlife Species Identified in the Records Search/Literature Review for the BSA

| Common Name | Scientific Name | Status Listing | Habitat and Comments | Habitat Present/ Absent | Rationale |
|---|---|---|---|---|---|
| Mexican long-tongued bat | *Choeronycteris mexicana* | Fed: None CA: CSC | Occasionally found in San Diego County. Feeds on nectar and pollen of night-blooming succulents. Roosts in relatively well-lit caves as well as in and around buildings. | HP | Although limited suitable habitat is present on site, the BSA is outside of the known range of this species. This species is not expected to occur within the BSA. |
| Townsend's big-eared bat | *Corynorhinus townsendii* | Fed: None CA: CSC | Varied habitats. Ranges from southwestern Canada through the western United States to southern Mexico. | HP | Roosting habitat appears to be absent, but foraging habitat may be present. Rare and local in the area and not found during 2011 field visits. |
| Stephens' kangaroo rat | *Dipodomys stephensi* | Fed: FE CA: ST | Found in plant communities transitional between grassland and coastal sage scrub with friable soils. Occurs in western Riverside County, northern San Diego County, and extreme southern San Bernardino County, below 3,000 ft (915 m) elevation. | HP | Outside the known range of the species. |
| Spotted bat | *Euderma maculatum* | Fed: None CA: CSC | Usually roost in cliffs, but ranges widely over varied habitats while foraging. Rare and local in southwestern California. | HP | Roosting habitat appears to be absent, but foraging habitat is present. Rare and local in the area and not found during 2011 field visits. |
| Western mastiff bat | *Eumops perotis californicus* | Fed: None CA: CSC | Inhabits many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands and chaparral communities. Roosts in crevices in cliff faces, high buildings, trees, and tunnels. | HP, O | Suitable habitat for this species is present on site. Not observed during the 2011 bat surveys, but detected multiple times during the ARTO surveys. |
| Western red bat | *Lasiurus blossevillii* | Fed: None CA: CSC | Forages over a wide range of habitats, but generally roosts in woodlands and forests. Ranges throughout most of California west of the deserts. | HP | There is a limited amount of suitable habitat present within the BSA. Not observed/detected in 2011. |
| Southwestern yellow bat | *Lasiurus xanthinus* | Fed: None CA: CSC | Varied habitats, but usually near water; often associated with palm trees. Southwestern United States to southern Mexico. | HP | Suitable habitat for this species is present on site. Not observed during the 2011 field visits. |

## Table 3.3: Listed, Proposed, and Special-status Wildlife Species Identified in the Records Search/Literature Review for the BSA

| Common Name | Scientific Name | Status Listing | Habitat and Comments | Habitat Present/ Absent | Rationale |
|---|---|---|---|---|---|
| San Diego black-tailed jackrabbit | *Lepus californicus bennettii* | Fed: None CA: CSC | Open country of coastal Southern California and northern Baja California. | HP | There is a limited amount of potentially suitable habitat present within the BSA. Not observed/in 2011. |
| Western small-footed myotis | *Myotis ciliolabrum* | Fed: None CA: CSA | Varied habitats throughout much of North America. | HP, O | There is a limited amount of potentially suitable habitat present within the BSA. Observed/detected in 2011 field visits. |
| Long-eared myotis | *Myotis evotis* | Fed: None CA: CSA | Varied habitats in western North America. | HP | Suitable habitat appears to be present on site, but not observed during 2011 field visits. |
| Yuma myotis | *Myotis yumanensis* | Fed: None CA: CSA | Common and widespread in California. Found in a wide variety of habitats ranging from sea level to 11,000 ft (3,300 m). Optimal habitats are open forests and woodlands with sources of water over which to feed. | HP, O | Suitable habitat for this species is present on site. Observed during the 2011 field visits. |
| San Diego desert woodrat | *Neotoma lepida intermedia* | Fed: None CA: CSC | Occurs in coastal sage scrub and chaparral, most commonly associated with rock outcrops and rocky cliffs and slopes. Found in coastal Southern California from San Diego County to San Luis Obispo County. | HP, O | Suitable habitat for this species is present on site. Observed during the 2011 field visits. |
| Pocketed free-tailed bat | *Nyctinomops femorosaccus* | Fed: None CA: CSC | Usually associated with cliffs or rock outcrops, often near riparian habitat. Occurs from the southwestern United States to central Mexico. | HP | There is a limited amount of suitable habitat present within the BSA. |
| Big free-tailed bat | *Nyctinomops macrotis* | Fed: None CA: CSC | Mainly inhabits rugged, rocky habitats in arid southwestern North America. Feeds principally on large moths. Roosts primarily in cliffs/rock crevices, and rarely in buildings, caves, and tree cavities. Not known to use bridges for roosting. | HP | Marginally suitable habitat is present on site. |
| American badger | *Taxidea taxus* | Fed: None CA: CSA | Occurs throughout much of North America. Primary habitat requirements seem to be sufficient food and friable soils in relatively open uncultivated ground in grasslands, woodlands, and desert. | HP | There is a limited amount of suitable habitat present within the BSA. Known to have occurred nearby. |

## Table 3.3: Listed, Proposed, and Special-status Wildlife Species Identified in the Records Search/Literature Review for the BSA

| Common Name | Scientific Name | Status Listing | Habitat and Comments | Habitat Present/ Absent | Rationale |
|---|---|---|---|---|---|
| Pacific pocket mouse | *Perognathus longimembris pacificus* | Fed: FE<br>CA: CSC | Historically occupied open habitats on sandy soils along the coast from Los Angeles to the Mexican border. Now known from only four sites in Orange and San Diego Cos. | A | Never known to occur this far from the coast. |

BSA = biological study area
CNDDB = California Natural Diversity Database
CSS = coastal sage scrub
ft = feet
m = meters
mi = miles
SR-74 = State Route 74

Status:
Federal Endangered (FE); Federal Threatened (FT); Federal Proposed (FP, FPE, FPT); Federal Candidate (FC), Federal Species of Concern (FSC); State Endangered (SE); State Threatened (ST); Fully Protected (FP); State Rare (SR); California Fully Protected Species (CFP); California Species of Special Concern (CSC); California Special Animal (CSA); California Native Plant Society (CNPS), etc.

Habitat:
Absent [A] – No habitat present and no further work needed. Habitat Present [HP] – Habitat is, or may be present.
Species present [P] – Based on the literature review, the species has been observed within the area of the BSA.
Critical Habitat [CH] – Project footprint is located within a designated federal critical habitat unit, but does not necessarily mean that appropriate habitat is present.

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# Chapter 4. Results: Biological Resources, Discussion of Impacts, and Mitigation

## 4.1. Natural Communities of Special Concern

Some natural communities or habitats are considered to be of special concern based on (1) federal, State, or local laws regulating their development; (2) limited distributions; and/or (3) the habitat requirements of special-status plants or animals occurring on site. LSA biologists identified three primary plant community groups that are considered important by State and/or local agencies. These communities occur with varied abundance on site. Each sensitive habitat identified within the project boundaries is described in more detail below and is shown on the Biological Resources figures in Appendix L. Wetlands and waters of the United States are also considered sensitive by both federal and State agencies, but are discussed in more detail in Section 5.3.

Three natural communities of special concern were identified within the BSA: CSS, southern cottonwood-willow riparian forest, and coast live oak woodland. Table 4.1 includes the Natural Communities of Special Concern within the BSA and indicates the amount of each community impacted by the project's proposed build alternative. Permanent and temporary impacts are proposed within the BSA limits. Impact locations are shown on the Vegetation Community Impacts figure in Appendix L and quantified in Table 4.1. Project impacts are based on LSA's interpretation of the construction plans.

**Table 4.1: Vegetation Communities Impacts within the BSA**

| Vegetation Community | Permanent Impacts acres (hectares) | Temporary Impacts (acres) (hectares) |
|---|---|---|
| **Scrub and Chaparral Habitats** | | |
| Coastal Sage Scrub* | 1.04 (0.42) | 0.57 (0.23) |
| Chaparral | 0.53 (0.21) | 0.13 (0.05) |
| **Riparian and Woodland Habitats** | | |
| Southern Cottonwood-Willow Riparian Forest* | 0.00 (0.00) | 0.03 (0.01) |
| Coast Live Oak Woodland* | 2.66 (1.08) | 1.83 (0.74) |
| **Disturbed Habitats** | | |
| Nonnative Grassland | 0.98 (0.40) | 0.74 (0.30) |
| Ornamental Trees | 0.14 (0.06) | 0.02 (0.01) |
| Developed Areas and Bare Ground | 8.49 (3.44) | 0.34 (0.14) |
| **Total** | **13.84 (5.60)** | **3.67 (1.49)** |

* = Natural Community of Special Concern

### 4.1.1. Discussion of Natural Community Oak Woodland

This oak woodland habitat type is considered important by the Department and the CDFW because the structural diversity and food production of this habitat type provide relatively high wildlife habitat values. In each type of oak habitat (e.g., woodland, riparian), there is a different set of co-occurring plant species that is often beneficial. Animals are affected by these differences in terms of food supply, nesting sites, and predator cover, and respond according to their own ecological requirement (Pavlik 1991). Both the Department and the CDFW recognize oak trees for their historical, aesthetic, and ecological qualities, and seek to preserve and propagate this unique, threatened plant community, especially those trees that may be classified as heritage oaks (Department 1989). The Department maintains all trees within the right of way for sight distance in relation to the road, including oak trees.

#### 4.1.1.1. Survey Results

The oak woodland vegetation community within the BSA is dominated by coast live oak and interspersed with patches of scrub oak (*Q. berberdifolia*). During the initial field survey, a total of 456 oaks were observed within the study area (376 coast live oaks and 80 scrub oaks). An additional estimated 17 coast live oaks were added to the inventory using aerial photography. No additional scrub oaks were discernible using aerial photography. Additional scrub oak shrubs within the project limits shall be inventoried following project staking. The approximate acreage of canopy for each species was 4.63 ac (1.87 ha) and 0.37 ac (0.15 ha), respectively. The dripline of oak trees in the BSA often extends to the paved roadway and road shoulder. These oaks are in the SR-74 right-of-way and are included in the Department maintenance program. Because these oaks are regularly maintained, work being conducted in the dripline of these oaks is considered acceptable.

#### 4.1.1.2. Avoidance and Minimization Efforts

The following measures will be incorporated to avoid and minimize impacts to oak trees and oak habitat:

- Prior to clearing or construction, highly visible barriers (such as orange construction fencing) and, as needed, silt fencing shall be installed around the protected zone of any oak tree or oak habitat. Such areas shall be designated as Environmentally Sensitive Areas (ESAs) to be preserved. The protected ESA zone will extend 5 ft (1.5 m) outside of the dripline or 15 ft (4.58 m) from the trunk of the tree, whichever is greater, unless the area includes a road shoulder or existing asphalt. In these instances, safety requires the road shoulder or existing

asphalt will not be included in the ESA, but rather will be considered a modified ESA area. These modified ESA areas are included since impacts to oaks may occur within these road shoulder and asphalt areas if roots become exposed, soil surrounding roots is excessively compacted, material is deposited over roots, or branches or roots are broken or damaged. In addition, to avoid breaking overhanging branches, branch trimming may be required. Proper tree pruning procedures shall be followed (See the Appendix C diagram in Appendix I, Oak Tree Assessment Report). No grading or fill activity of any type will be permitted within the ESA. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment shall be operated in such a manner as to prevent accidental damage to nearby oaks. No structure of any kind, or incidental storage of equipment or supplies, shall be allowed within the ESA. Silt fence barriers will be installed at the ESA boundary to prevent accidental deposition of fill material in areas where trees are immediately adjacent to planned construction activities.

- In order to avoid impacts to nesting birds, any native vegetation removal or tree (native or exotic) trimming activities will occur outside of the nesting bird season (February 15–August 31). In the event that vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a preconstruction survey to identify the locations of nests. Should nesting birds be found, an exclusionary buffer will be established by the qualified biologist. This buffer will be clearly marked in the field by construction personnel under guidance of the qualified biologist, and construction or clearing shall not be conducted within this zone until the qualified biologist determines that the young have fledged or the nest is no longer active.
- Inspection and cleaning of construction equipment will be performed to minimize the importation of nonnative plant material, and eradication strategies (i.e., weed abatement programs) will be employed should an invasion occur.

#### 4.1.1.3. PROJECT IMPACTS

The oak habitat within the BSA has been subjected to various degrees of disturbances. Nevertheless, this habitat type is especially valuable and of limited distribution. In addition, it can provide habitat for well over 300 terrestrial species (Pavlik 1991). Past disturbances to this habitat type only partially reduce its importance.

As shown in Table 4.1 above, the proposed project would permanently impact a total of approximately 2.66 ac (1.08 ha) of coast live oak woodland and temporarily impact

1.83 ac (0.74 ha) of coast live oak woodland. This equates to permanent impact to approximately 175 trees and temporary impact to approximately 115 trees. Permanent impacts may include complete removal, substantial encroachment, or extensive branch removal that may have significant detrimental impacts to the long-term viability of the trees. Temporary impacts would be limited to the duration of the project and would not affect the long-term viability of the trees and may include minor trimming, foot traffic within driplines, and dust. Appendix L illustrates the locations of proposed impacts to coast live oak woodland within the BSA.

Other than complete permanent removal of a tree, the permanent impact to individual trees due to substantial encroachment or extensive branch removal has to be estimated. Some individual trees may thrive with extensive trimming, while others may die out completely. Therefore, an inventory of affected oak trees will be kept by the biological monitor to ensure that the number of individual trees affected does not exceed that disclosed in this document. Because the development of mature large trees requires 60–80 years, the direct removal of oak trees and oak habitat will result in unavoidable long-term loss of habitat, which will remain considerable even after mitigation.

#### 4.1.1.4. COMPENSATORY MITIGATION

Senate Concurrent Resolution No. 17 (filed with the Secretary of State on September 1, 1989) requires all State agencies preserve and protect native oak woodlands to the maximum extent feasible or to provide for replacement plantings. Per Department policy, impacts to any oak trees (excluding California scrub oaks) with trunk sizes greater than 8 in (20.32 cm) diameter at breast height (dbh) but less than 36 in (91.4 cm) dbh will be replaced at a minimum mitigation-to-impact ratio of 1:1, if feasible. Heritage oaks (oaks with dbh greater than 36 in [91.4 cm]) will be replaced at a minimum mitigation-to-impact ratio of 3:1, if feasible. Any replacement planting of oaks is not anticipated to take place within the project limits, due to lack of right of way. Replacement plantings will likely take place in the City of San Juan Capistrano or suitable areas in proximity to the project.

#### 4.1.1.5. CUMULATIVE IMPACTS

Most of California's oaks are found on private property and are located in suburban and semirural areas subject to development. In many areas of the State, oak populations are experiencing little or no tree replacement. Although there are periodic seasons of good acorn germination and seedling establishment, there is a persistent

failure for seedlings to become pole-size trees (Pavlik 1991). Therefore, despite protection, California's oaks and oak habitats are declining.

Although the Department provides for the protection and replacement of oak trees and the protection of oak habitats, oak trees take 60–80 years to mature. However, suitable habitat is expected to be available for wildlife within 20 years of planting. Nonetheless, the removal of mature oak trees would contribute cumulatively to the decline of this habitat in the long term.

### 4.1.2. Discussion of Natural Community Riparian/Riverine Habitats

Riparian habitats such as those within the BSA were formerly abundant along major rivers of coastal Southern California but are now much reduced by urban expansion, flood control, and channel "improvements" (Holland 1986). The typical association of these riparian habitat types with drainages means that they are "protected" under the Fish and Game Code and, to certain extent, by the CWA. These habitats are considered high-quality wildlife habitats because they provide protective cover, water, and food for a variety of species. Many animal species are riparian habitat obligates. Other animals, including large mammals, require access to water and use riparian habitat as wildlife corridors. As such, the CDFW regulates riparian areas to the extent that those areas are associated with rivers, streams, or lakes.

#### 4.1.2.1. Survey Results

A total of 0.03 ac (0.01 ha) of southern cottonwood-willow riparian forest occurs within the BSA.

#### 4.1.2.2. Avoidance and Minimization Efforts

The following measures will be incorporated to avoid and minimize impacts to riparian/riverine habitat:

- Prior to clearing or construction, highly visible barriers (such as orange construction fencing) and, as needed, silt fencing will be installed around riparian/riverine vegetation adjacent to the project footprint to designate ESAs to be preserved. No grading or fill activity of any type will be permitted within these ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment will be operated in a manner so as to prevent accidental damage to nearby preserved areas. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within these protected zones. Silt fence barriers will be installed at the

ESA boundary to prevent accidental deposition of fill material in areas where vegetation is immediately adjacent to planned grading activities.

- In order to avoid impacts to nesting birds, any native vegetation removal or tree (native or exotic) trimming activities will occur outside of the nesting bird season (February 15–August 31). In the event that vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a preconstruction survey to identify the locations of nests. Should nesting birds be found, an exclusionary buffer will be established by the qualified biologist. This buffer should be clearly marked in the field by construction personnel under guidance of the qualified biologist, and construction or clearing will not be conducted within this zone until the qualified biologist determines that the young have fledged or the nest is no longer active.
- Inspection and cleaning of construction equipment would be performed to minimize the importation of nonnative plant material, and eradication strategies (i.e., weed abatement programs) would be employed should an invasion occur.

#### 4.1.2.3. PROJECT IMPACTS

The proposed project would result in direct permanent and temporary impacts to potentially jurisdictional riparian/riverine habitat through disturbance and/or removal of existing vegetation. Table 4.2 below shows how much the proposed project will impact the riparian habitat. Appendix M illustrates where the proposed project will impact riparian/riverine habitats.

**Table 4.2: Project Impacts to Riparian/Riverine Habitat within the Project Boundary**

| Vegetation Community | Permanent Impacts acres (hectares) | Temporary Impacts acres (hectares) |
|---|---|---|
| Southern Cottonwood-Willow Riparian Forest | 0.00 (0.00) | 0.03 (0.01) |
| Coast Live Oak Woodland* | 2.66 (1.08) | 1.83 (0.74) |
| **Total** | **2.66 (1.08)** | **1.86 (0.75)** |

In addition to direct permanent and temporary impacts, the proposed project will result in indirect impacts through the degradation of riparian/riverine habitats. Indirect impacts include construction-related impacts such as dust, potential fuel spills from construction equipment, possible night lighting during construction, and activities of equipment or personnel outside designated construction areas, as well as operation impacts such as impacts on adjacent habitats caused by storm water runoff,

traffic, and litter. In addition, construction may indirectly impact riparian/riverine habitats permanently through enhancing the germination and proliferation of nonnative invasive plant species. Invasive plant species are those that aggressively outcompete native plants and are of particular concern. Indirect impacts are difficult to quantify since they are a result of normal activities and can change from day to day.

In addition, site design and source control and treatment Best Management Practices (BMPs) will be incorporated into the project to help avoid, minimize, and mitigate potential adverse impacts due to increased storm water runoff.

#### 4.1.2.4. COMPENSATORY MITIGATION

The majority of the existing riparian communities fall under the regulatory jurisdiction of the USACE pursuant to Section 404 of the CWA and CDFW pursuant to Section 1600 of the California Fish and Game Code. Compensatory mitigation for riparian communities will be required for USACE Section 404 and CDFW Section 1600 permitting. As discussed above in Section 2.1.6.1, San Juan Creek Special Area Management Plan, the areas of USACE and/or CDFW jurisdiction (i.e., areas where tributaries of San Juan Creek intersect with the project alignment) are included within the San Juan Creek Watershed and the San Juan Creek SAMP. Therefore, they may be subject to an abbreviated alternative permitting and mitigation process. If the project is determined to be consistent with the San Juan Creek SAMP, compensatory mitigation will be conducted as the San Juan Creek SAMP conditions require.

If the project is determined not to be consistent with the San Juan Creek SAMP, an Individual Permit will be obtained and riparian habitat subject to USACE and CDFW jurisdiction will be mitigated at a minimum mitigation-to-impact ratio of 2:1 for permanent impacts, and will provide for no net loss of riparian habitat value or acreage. This mitigation will include a minimum of 0.03 ac (0.01 ha) of habitat creation, or payment of in-lieu fees or participation in a mitigation bank that creates riparian habitat of comparable value. In order to provide a mitigation ratio of 2:1, an additional 0.03 ac (0.01 ha) of mitigation will be required, which may include riparian habitat creation, restoration, enhancement, in-lieu fees, and/or participation in a mitigation bank. As part of the conditions of the Individual Permit, a Habitat Mitigation and Monitoring Plan (HMMP) will be required and must be approved by the USACE, CDFW, and USFWS to ensure no net loss of riparian habitat value or acreage.

Final details for compensatory mitigation will be evaluated through coordination between Department and the regulatory agencies during the regulatory permitting process.

#### 4.1.2.5. CUMULATIVE IMPACTS

The majority of the land within the BSA is currently developed or zoned as Open Space, according to the Orange County General Plan. Thus, it is reasonably foreseeable that those parcels that are not currently developed will not be developed in the future. In addition, development within San Juan Creek is limited. However, future widening projects are reasonably certain to occur in the future. These projects have the potential to encroach further into adjacent riparian habitat. Other activities that may occur following the proposed construction, including maintenance clearing and fuel modification, may have cumulative impacts to the surrounding environment.

### 4.1.3. Discussion of Natural Community Coastal Sage Scrub Habitat

CSS is generally a patchy vegetation community found in diverse habitat mosaics and is dominated by a suite of shrub species found in Southern California. Shrub cover is dense and generally continuous, with low moisture content. Steep, xeric slopes and quickly draining soils characterize the CSS community. Annual herbs, including weedy grasses and forbs and native wildflowers, are common in openings and disturbed areas.

CSS has become displaced by spreading urbanization. Many rare and endangered species occur in CSS and associated plant communities. Consequently, degradation and displacement of CSS also has resulted in substantial habitat loss for a variety of animal species. Therefore, the CDFW and USFWS have special concern for these habitat types. CSS communities on site match the CSS vegetation communities described by Holland (1986).

#### 4.1.3.1. SURVEY RESULTS

A total of 2.20 ac (0.89 ha) of CSS is scattered throughout the BSA and is patchy, but of good quality.

#### 4.1.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

The following measures will be incorporated to avoid and minimize impacts to CSS habitat:

- Prior to clearing or construction, highly visible barriers (such as orange construction fencing) and, as needed, silt fencing will be installed around CSS

adjacent to the project footprint to designate ESAs to be preserved. No grading or fill activity of any type will be permitted within these ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment will be operated in a manner so as to prevent accidental damage to nearby preserved areas. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within these protected zones. Silt fence barriers will be installed at the ESA boundary to prevent accidental deposition of fill material in areas where vegetation is immediately adjacent to planned grading activities.

- In order to avoid impacts to nesting birds, any native vegetation removal or trimming activities will occur outside of the nesting bird season (February 15–August 31). In the event that vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a preconstruction survey to identify the locations of nests. Should nesting birds be found, an exclusionary buffer will be established by the qualified biologist. This buffer should be clearly marked in the field by construction personnel under guidance of the qualified biologist, and construction or clearing will not be conducted within this zone until the qualified biologist determines that the young have fledged or the nest is no longer active.
- Inspection and cleaning of construction equipment would be performed to minimize the importation of nonnative plant material, and eradication strategies (i.e., weed abatement programs) would be employed should an invasion occur.

#### 4.1.3.3. PROJECT IMPACTS

The proposed project is expected to potentially result in direct permanent and temporary impacts to CSS. With regard to degradation of CSS habitat, the proposed project will result in indirect impacts in a similar manner as described for the riparian/riverine natural community above. The proposed project would permanently impact a total of 1.04 ac (0.42 ha) of CSS and temporarily impact approximately 0.57 ac (0.23 ha) of CSS. Appendix M illustrates where the proposed project will impact CSS. Based on the characteristically small patches of CSS to be permanently affected and the current level of disturbance, the proposed project is not expected to significantly impact any special-status species associated with CSS habitat in the BSA.

#### 4.1.3.4. COMPENSATORY MITIGATION

The proposed project will not impact any CAGN-designated critical habitat, and there are relatively few special-status species occurring in the CSS in the BSA. In addition, the impacts proposed for this project are not inconsistent with those identified in the

MSAA/HCP for the anticipated road improvements (see Section 5.1 for further discussion regarding the MSAA/HCP). For these reasons, no compensatory mitigation for impacts to CSS is required.

#### 4.1.3.5. CUMULATIVE IMPACTS

RMV surrounds the BSA, and the RMVRP proposes residential and commercial development with open space designations throughout the area. In addition, the State Route 241 (SR-241) extension may impact CSS habitat to the east, while the Prima Deshecha Landfill expansion and La Pata Avenue/Antonio Parkway extension are expected to impact CSS habitat to the southwest.

Specific to this project, cumulative effects to CSS habitat are expected through the loss and degradation of potential foraging habitat along the project edge; however, this small amount of habitat is a mosaic with other vegetation community types, and more continuous blocks of CSS within the subregion are substantially preserved through the MSAA/HCP. Therefore, the proposed project impacts to CSS habitat or the special-status species associated with these areas (i.e., CAGN) would be minimal and not substantial with consideration of other project impacts and comprehensive habitat conservation.

## 4.2. Special-Status Plant Species

A total of 6 of the 50 special-status plant species identified during the records search/ literature review for the BSA are federal- and/or State-listed as endangered, threatened, or candidate species: Encinitas baccharis, thread-leaved brodiaea, slender-horned spineflower, Santa Monica Mountains dudleya, Laguna Beach dudleya, and big-leaved crown-beard. As noted in Chapter 3, the BSA is outside the expected current range of Encinitas baccharis, slender-horned spineflower, Santa Monica Mountains dudleya, Laguna Beach dudleya, and big-leaved crown-beard; these species are, therefore, not discussed further. The results of surveys, critical habitat discussion, minimization/mitigation measures, project impacts, and cumulative impacts for thread-leaved brodiaea is discussed in this chapter. In addition, other special-status plant species, including those listed by the CNPS as List 1B, 2, 3, and 4 with potential of occurring within the BSA, are discussed in this chapter.

### 4.2.1. Discussion of Thread-leaved Brodiaea

Thread-leaved brodiaea is a perennial herb typically associated with grassland or vernal pools. It usually grows on clay or alkaline flats from 80 to 4,000 ft (24.38 to 1,219 m) in elevation. It occurs from San Diego and Riverside Counties northward to

San Luis Obispo County. This species is federally listed as threatened, State-listed as endangered, and a CNPS List 1B species.

#### 4.2.1.1. SURVEY RESULTS

Areas of grassland in the study area may be marginally suitable for this species. However, due to disturbance and the absence of vernal pools and alkaline areas, there is a low probability this plant would occur within the BSA. In addition, botanical surveys conducted in 2011 during the appropriate blooming period for this species were negative. Therefore, the species is considered absent from the site.

#### 4.2.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

Because this species is considered absent from the BSA, no avoidance and minimization efforts are required.

#### 4.2.1.3. PROJECT IMPACTS

Because this species is considered absent from the BSA, the project is not expected to impact this species.

#### 4.2.1.4. COMPENSATORY MITIGATION

Because this species is considered absent from the BSA, no compensatory mitigation is required.

#### 4.2.1.5. CUMULATIVE EFFECTS

Because this species is considered absent from the BSA, it is unlikely that this project will contribute to cumulative effects to this species.

### 4.2.2. Discussion of Other Special-Status Coastal Sage Scrub and Chaparral Plant Species

Other special-status species with the potential to occur in CSS and chaparral habitats within the BSA include aphanisma (CNPS List 1B), Coulter's saltbush (CNPS List 1B), Plummer's mariposa lily (CNPS List 1B), intermediate mariposa lily (CNPS List 1B), Orcutt's pincushion (CNPS List 1B), summer holly (CNPS List 1B), long-spined spineflower (CNPS List 1B), Blochman's dudleya (CNPS List 1B), many-stemmed dudleya (CNPS List 1B), sticky dudleya (CNPS List 1B), cliff spurge (CNPS List 2), mesa horkelia (CNPS List 1B), Robinson's pepper-grass (CNPS List 1B), Santa Catalina Island desert-thorn (CNPS List 1B), Nuttall's scrub oak (CNPS List 1B), San Miguel savory (CNPS List 1B), and rayless ragwort (CNPS List 2).

#### 4.2.2.1. SURVEY RESULTS

Some suitable habitat exists on site that could support these species; however, much of the habitat on site is disturbed. In addition, none of these species were found during botanical surveys conducted in 2011 during the appropriate blooming period. Therefore, all of these species are considered absent from the BSA.

#### 4.2.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance and minimization measures are warranted because these species are considered absent from the BSA.

#### 4.2.2.3. PROJECT IMPACTS

The proposed project would not be expected to affect any of these species because they are considered absent from the BSA.

#### 4.2.2.4. COMPENSATORY MITIGATION

No compensatory mitigation is warranted because these species are considered absent from the BSA.

#### 4.2.2.5. CUMULATIVE EFFECTS

Because these species are considered absent from the BSA, it is unlikely that this project will contribute to cumulative effects to them.

### 4.2.3. Discussion of Special-Status Grassland and Open Habitat Plant Species

Special-status species with the potential to occur in grassland and open habitats within the BSA include California screw-moss (CNPS List 1B), southern tarplant (CNPS List 1B), Pendleton button-celery (CNPS List 1B), Palmer's grapplinghook (CNPS List 4), and Allen's daisy (CNPS List 1B).

#### 4.2.3.1. SURVEY RESULTS

Some suitable habitat exists on site, which could support these species; however, much of the habitat on site is disturbed or degraded by infestations of nonnative species. In addition, none of these species were found during botanical surveys conducted in 2011 during the appropriate blooming period. Therefore, all of these species are considered absent from the BSA.

#### 4.2.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance and minimization measures are warranted because these species are considered absent from the BSA.

#### 4.2.3.3. PROJECT IMPACTS

The proposed project would not be expected to affect any of these species because they are considered absent from the BSA.

#### 4.2.3.4. COMPENSATORY MITIGATION

No compensatory mitigation is warranted because these species are considered absent from the BSA.

#### 4.2.3.5. CUMULATIVE EFFECTS

Because these species are considered absent from the BSA, it is unlikely that this project will contribute to cumulative effects to them.

### 4.2.4. Discussion of Other Special-Status Riparian and Aquatic Plant Species

Another special-status species with the potential to occur in riparian and aquatic areas within the BSA includes Orcutt's brodiaea (CNPS List 1B).

#### 4.2.4.1. SURVEY RESULTS

Some suitable habitat exists on site that could support this species; however, much of the habitat on site is disturbed. In addition, this species was not found during botanical surveys conducted in 2011 during the appropriate blooming period. Therefore, this species is considered absent from the BSA.

#### 4.2.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance and minimization measures are warranted because this species is considered absent from the BSA.

#### 4.2.4.3. PROJECT IMPACTS

The proposed project would not be expected to affect this species because it is considered absent from the BSA.

#### 4.2.4.4. COMPENSATORY MITIGATION

No compensatory mitigation is warranted because this species is considered absent from the BSA.

#### 4.2.4.5. CUMULATIVE EFFECTS

Because this species is considered absent from the BSA, it is unlikely that this project will contribute to cumulative effects to it.

## 4.3. Special-Status Animal Species Occurrences

A total of 9 of the 62 special-status animal species identified in the records search/ literature review for the BSA are federal- and/or State-listed as endangered, threatened, or candidate species: tidewater goby, southern steelhead-South/Central California, ARTO, western snowy plover, southwestern willow flycatcher (SWWF), coastal CAGN, LBVI, Stephens' kangaroo rat, and Pacific pocket mouse. In addition, golden eagle, white-tailed kite, and ringtail are considered fully protected species by the State of California. As noted in Chapter 3, suitable habitat for tidewater goby, southern steelhead- South/Central California, western snowy plover, SWWF, Pacific pocket mouse, and golden eagle is not present within the BSA, and the BSA is outside the known range of Stephens' kangaroo rat; these species are, therefore, not discussed further. The results of surveys, critical habitat discussion, minimization/mitigation measures, project impacts, and cumulative impacts for the remaining listed wildlife species are discussed in this chapter. In addition, other special-status wildlife species with potential of occurring within the BSA are discussed in this chapter.

### 4.3.1. Discussion of Arroyo Toad

This amphibian inhabits washes, streams, and arroyos in semiarid parts of the southwest. In southern California, it frequents sandy banks adjacent to streams, often with willows, cottonwoods, and sycamores. Requirements of relatively large, streamside flats with scattered vegetation adjacent to shallow pools with open sand or cobble bars have placed significant constraints on where ARTOs occur. Development and alteration of streamside flats by altering the natural hydrologic regime are thought to be major contributors to the extirpation of historic populations. This led to the ARTO being federally listed as endangered in March 1996. In addition, this species is a California Species of Special Concern.

Revised critical habitat was designated by the USFWS for this species in February 2011 (USFWS 2011). Unit 10a (San Juan Creek Basin, Orange County) of the designated critical habitat areas includes most of San Juan Creek and adjacent uplands in the San Juan Creek Basin. The BSA vicinity is known to support a large core population of ARTO (CNDDB 2011). The portions of San Juan Creek within the vicinity of the BSA and much of the BSA are within ARTO designated critical habitat (see figure in Appendix L).

Notably, ARTO populations have increased in San Juan Creek due to efforts to eradicate American bullfrogs (*Lithobates catesbeianus*) and red swamp crayfish

(*Procambarus clarkii*) within the upper portions of San Juan Creek from the eastern section of Casper's Wilderness Park east to the County line. These Department-supported mitigation efforts for invasive species removal occurred between 2007 and 2012 with considerable success. The first breeding evidence (i.e., eggs, tadpoles, and subadults) was documented in 2010 after 3 years of nonnative species removal. Long-term success is unknown at this time and will depend on site and weather conditions and limited predation pressure.

#### 4.3.1.1. SURVEY RESULTS

A San Juan Creek ARTO population is well-documented (CNDDB 2011). The creekbed within the vicinity of the BSA contains patchy vegetation and shallow pools, which are suitable habitat for this species. In 2011, positive auditory surveys were conducted from the Department's SR-74 ROW, which did not have direct access to San Juan Creek. A minimum total of five (5) male ARTOs were detected aurally in San Juan Creek. Female toads are not detectable aurally, so quantification was not possible during the six survey visits. Further details are provided in the ARTO Survey Report, included in Appendix E.

#### 4.3.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

The following avoidance and minimization efforts comply with and exceed those described for ARTO in Appendix U, Avoidance and Minimization Measures, of the MSAA/HCP. The following measures will be incorporated to avoid and minimize impacts to ARTO and ARTO critical habitat:

- Construction activities should occur outside the rainy season (October–May) to ensure that sedimentation within the drainage does not occur during construction activities. If construction must occur during the rainy season, then protective measures include the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) and BMPs. The SWPPP and BMPs must include measures to keep sediment out of the creek during and after storm events (for example, excavation spoils being stored outside the creek).
- In addition, for the protection of sensitive resources, including this sensitive species, conditions regarding dust, noise, lighting, and other construction monitoring activities shall be outlined in the SWPPP and BMPs.
- Immediately prior to construction, a qualified biologist shall provide an employee education program for listed species that may be affected by project work activities for all persons who will work on site during construction.

- No fueling, lubrication, storage, or maintenance of construction equipment within 46 m (150 ft) of CDFW or USACE jurisdictional areas is permitted. Spoil sites shall not be located within the CDFW or USACE jurisdictional areas, or in areas where it could be washed into San Juan Creek or its tributaries.
- To reduce impacts to this sensitive species, all construction-related activities shall be confined to the proposed impact boundaries by installing silt fencing along the boundary to prevent any construction activities from encroaching into adjacent areas and to prevent ARTO from moving into the construction area. Per the MSAA/HCP, ARTO exclusion fencing shall be installed for any work within 300 ft (91.44 m) of a known ARTO population in San Juan Creek (County of Orange 2006). Fencing shall be approximately 2 ft (0.61 m) in height, 1 ft (0.30 m) of which shall be buried below the ground surface. Fencing shall be installed at least 14 days prior to the initiation of construction activities and shall be of appropriate material to exclude toads from the construction site. A qualified biologist shall survey the area inside the enclosure for a minimum of 10 nights prior to construction to relocate any toads observed within the construction impact area. ARTO found by the qualified biologist within the construction area shall be removed and relocated in suitable habitat either upstream or downstream of the project area. The qualified biologist will prepare temporary storage prior to the capture of toads. Any biologists handling ARTO must be authorized to do so by the appropriate agencies. In addition, construction access points shall be limited in proximity of this habitat type to the maximum extent feasible. During all construction activities, the construction contractor will take the appropriate measures to ensure that no waste material is discharged into the perennial watercourse. Trash and debris deposits adjacent to this sensitive habitat type will be disposed of daily.
- A qualified biologist will monitor all construction activities within and adjacent to this sensitive habitat type to ensure that construction does not encroach into adjacent areas. The qualified biologist shall provide quarterly monitoring reports documenting compliance with the avoidance and minimization measures. The report shall be submitted to the Department and the implementing resource agencies.
- The contractor shall cover grubbing spoils and other grading debris with plastic sheeting to prevent ARTO and other toad species from opportunistically burrowing in these exposed and friable soils. The sheeting shall be placed on the soils prior to sunset and shall remain in place during nighttime hours. The areas

where this measure will be implemented shall be determined by a qualified biologist in coordination with the USFWS.

- No equipment or vehicles shall be driven on access roads adjacent to occupied ARTO habitat after sunset or prior to dawn. If the site must be accessed during these hours, a biologist permitted by the appropriate resource agencies to handle the ARTO must survey in front of the vehicle to identify and relocate individuals found on the road.
- ARTO are nocturnal and can be particularly affected by nighttime artificial lighting. In order to minimize and avoid the effects of lighting on wildlife, construction lighting during nighttime construction activities shall be shielded away from natural areas, as feasible.
- All silt fencing shall be removed as a last order of work. During removal, a biological monitor familiar with ARTO and authorized to handle and relocate ARTO should be present.
- The District Biologist, in coordination with the engineer, will examine and approve all staging and storage areas.

#### 4.3.1.3. PROJECT IMPACTS

Wildlife, including the ARTO, in the vicinity of the road would be subjected to permanent and temporary impacts to upland ARTO critical habitat and indirect impacts from construction/operation noise, high-intensity lighting, storm water runoff, erosion, urban pests (e.g., common raven), and invasive plant material.

A total of 9.53 ac (3.85 ha) of designated ARTO critical habitat would be permanently impacted by the project, although 5.86 ac (2.37 ha) of this permanently impacted area is characterized as having an asphalt surface. The ARTO critical habitat covered by asphalt does not contain the constituent elements required for ARTO to flourish. In addition, 2.38 ac (0.96 ha) of ARTO critical habitat would be temporarily impacted by the project. Appendix L includes a figure depicting the BSA and the ARTO critical habitat boundary.

Project-related influences on wildlife can extend well into areas adjacent to construction to the point where wildlife outside the project footprint may be forced to vacate the area due to the chronic nature of the construction disturbance. In addition, individuals that do not vacate adjacent habitats may still perish due to predation or competitive effects with other animals encountered during their dispersal movements. However, as there is an existing highway currently at the same location, any increase in indirect effects from traffic, construction/operation noise, lighting, storm water

runoff, and invasive plant material is not expected to be a significant increase from the present condition.

In addition, the MSAA/HCP states that construction of infrastructure facilities is allowed in ARTO corridors such as San Juan Creek if the facilities are located outside of the ordinary high water mark (OHWM) of the creek (County of Orange 2006).

#### 4.3.1.4. COMPENSATORY MITIGATION

ARTO is a covered species within the Southern Subregion MSAA/HCP; therefore, there is adequate existing habitat to promote the success of this species. However, the permanent habitat impacts to ARTO critical habitat may require Section 7 consultation, and if so, mitigation may be required.

If mitigation is required, a Revegetation/Habitat Restoration and Enhancement Plan will be prepared for off-site measures to mitigate for permanent impacts and shall include a plant species list, proposed techniques, and planting native shrubs and trees from local seed stock, preferably from seed or propagules salvaged from mature habitats within the proposed alignment. The plan also will include current performance standards, maintenance criteria, and monitoring requirements, as well as remedial measures to be taken if performance standards are not met. Prior to implementation of the plan, a draft shall be submitted to the USFWS, CDFW, and USACE for their approval. The primary goal of the plan will be to ensure the long-term perpetuation of the existing habitat diversity in the project vicinity.

Due to the success of invasive species removal efforts within San Juan Creek, as described in Section 4.3.1 above, expanding upon this eradication effort will also be considered as a compensatory mitigation alternative.

#### 4.3.1.5. CUMULATIVE IMPACTS

Some cumulative effects, through direct loss or degradation of USFWS-designated critical habitat for ARTO, are expected from the project. Cumulative effects from other proposed projects (e.g., the SR-241 extension, the development on RMV, the Cow Camp Road improvements) may also affect critical habitat; however, direct effects to ARTO breeding pools are not expected, nor are substantial reductions of foraging habitat.

Typically, indirect impacts (e.g., human disturbance, increased occurrences of invasive plant species) to wildlife would be chronic and could seriously degrade the habitat value along the periphery of the proposed road widening; however, as there is an existing roadway present within the project area and the number of lanes will not

increase, these impacts are not expected to significantly increase from the existing condition. Similarly, road runoff effects to water quality are not expected to significantly increase from the existing condition. Project-specific activities that may occur following the proposed construction, including periodic maintenance clearing and fuel modification, already occur along the project area, and these regular and confined activities are not expected to have increased cumulative impacts to adjacent potential ARTO habitat.

However, several other projects may pose cumulative effects to ARTO. For example, some open space areas could be amended based on residential and commercial development proposed in the RMVRP (County 2004). In addition, several road widening and new road construction projects, including the construction of the New Ortega Highway, the widening of and improvements to Cristianitos Road, the improvements to and extension of Cow Camp Road between Antonio Parkway and the future SR-241, and the extension of SR-241, are currently proposed in the RMVRP, the Orange County Transportation Authority's (OCTA) Master Plan of Arterial Highways (MPAH), and/or the County of Orange General Plan. These projects, including the SR-74 Safety Project, may either directly impact, encroach into, or potentially effect ARTO habitat, including designated critical habitat associated with San Juan Creek.

Some of these projects have addressed effects and mitigation through participation in the County NCCP Program and/or a SAMP/MSAA prepared jointly by the USFWS and CDFW. It is expected that the remaining cumulative projects in the area not participating in the County NCCP and/or SAMP/MSAA will include appropriate avoidance, minimization, mitigation, and compensation measures to address the permanent and temporary impacts of those projects in ARTO habitat.

### 4.3.2. Discussion of Nuttall's Woodpecker

Nuttall's woodpecker is a small nonmigratory woodpecker that occurs predominantly in oak woodlands and riparian forests. Nuttall's woodpeckers have a black-and-white barred back with a white throat, breast, and belly. Males have red coloring on the rear crown and upper nape area.

#### 4.3.2.1. SURVEY RESULTS

Nuttall's woodpeckers were observed within the BSA during bird surveys conducted in 2011.

#### 4.3.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

Because this species occupies the oak woodland and riparian/riverine natural communities, avoidance and minimization efforts for Nuttall's woodpecker are the same those described above for those communities.

#### 4.3.2.3. PROJECT IMPACTS

The proposed project is not expected to directly impact this species as a result of the avoidance and minimization measures outlined for the oak woodland and riparian/riverine natural communities. However, the proposed project is expected to have indirect and temporary impacts to Nuttall's woodpecker through the loss of potential habitat. Therefore, project impacts for this species are the same as those for the oak woodland and riparian/riverine natural communities in Sections 4.1.1.3 and 4.1.2.3, respectively.

#### 4.3.2.4. COMPENSATORY MITIGATION

Due to the measures described above, the proposed project is not expected to directly affect this species; therefore, specific compensatory mitigation is not warranted. However, because this species occurs within oak woodland and riparian/riverine habitats, compensatory mitigation described for those natural communities will benefit Nuttall's woodpeckers as well.

#### 4.3.2.5. CUMULATIVE EFFECTS

Cumulative effects to Nuttall's woodpeckers are expected through the loss and degradation of potential habitat. As a result, cumulative effects to this species are the same as those described for the Natural Communities of Special Concern described above.

### 4.3.3. Discussion of Coastal California Gnatcatcher

The coastal CAGN was listed as threatened by the USFWS in March 1993 (USFWS 1993). On February 7, 2000, approximately 513,650 ac (207,862 ha) in Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties were designated as critical habitat for the CAGN (USFWS 2000). New boundaries of critical habitat totaling 495,795 ac (200,647 ha) were proposed in April 2003 (USFWS 2003). On December 19, 2007, the USFWS designated as revised final critical habitat 197,303 ac (79,844 ha) (USFWS 2007). This revised final rule excludes lands within approved HCP areas, relieving additional regulatory burden on property owners who might be imposed upon by critical habitat designation. Designated critical habitat is located approximately 1.24 mi (2 km) south of the BSA, as well as near the west end of the

project alignment (e.g., approximately 0.62 mi (1 km) southwest of the intersection of SR-74 and Antonio Parkway). Appendix M shows the location of designated critical habitat near the BSA.

The coastal CAGN is a nonmigratory songbird that typically nests and forages in moderately dense stands of CSS below 2,500 ft (762 m) in Southern California. Gnatcatchers usually defend breeding territories ranging in size from 2 to 14 ac (0.81 to 5.66 ha) and occupy home ranges that vary in size from 13 to 39 ac (5.26 to 15.78 ha). The breeding season of the coastal CAGN generally extends from February 15 through August 30. After the chicks have fledged, juveniles remain closely associated with their parents for up to several months and may disperse up to 9 mi (14.48 km) from their natal territory.

#### 4.3.3.1. SURVEY RESULTS

As described in Section 4.1.3.4 above, suitable vegetation (i.e., CSS) for CAGN exists in patches along the south side of SR-74, but was not of a suitable size (acreage) to support a CAGN territory. In addition, most of these small patches of CSS were surrounded by mature oak woodland and/or extensive grassland rather than nearby CSS, which makes them less desirable due to either increased predation and/or limited foraging habitat. Protocol CAGN surveys were not conducted, and no CAGN were detected during the riparian bird surveys, the botanical surveys, or other 2011 or 2012 field visits. In addition, the proposed project will not impact any areas designated as CAGN critical habitat.

#### 4.3.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

Although no CAGN were observed during riparian bird surveys, and no breeding territories are expected to occur within the project area, the proposed project would impact CSS habitat. CAGN have been reported 1 mi (1.61 km) north and south of the BSA, and it is possible for CAGN to move into the project area prior to construction. Therefore, the avoidance and minimization measures described for the CSS natural community in Section 4.1.3.2 will also benefit CAGN.

#### 4.3.3.3. PROJECT IMPACTS

The proposed project is not expected to directly impact CAGN as a result of the avoidance and minimization measures described in Section 4.1.3.2 and the low probability of CAGN to occur within the BSA. However, the proposed project is expected to have indirect and temporary impacts to CAGN through loss of potential

foraging and dispersal habitat. Therefore, project impacts for this species are the same as those described for the CSS natural community in Section 4.1.3.3.

#### 4.3.3.4. COMPENSATORY MITIGATION

Due to the measures described above, the proposed project is not expected to directly affect this species; therefore, specific compensatory mitigation is not warranted.

#### 4.3.3.5. CUMULATIVE EFFECTS

Cumulative effects to CAGN are expected through the loss and degradation of potential foraging habitat along the project edge; however, this small amount of habitat is a mosaic with other vegetation community types. Therefore, the proposed project is not expected to impact CSS habitat or the special-status species associated with these areas (i.e., CAGN) more than incrementally.

Further discussion of cumulative effects to CAGN is provided in the Cumulative Effects discussion for CSS in Section 4.1.3.5.

### 4.3.4. Discussion of Least Bell's Vireo

The LBVI was listed as an endangered species by State and federal agencies in 1980 and 1986, respectively, and critical habitat was designated in 1994 (USFWS 1986, 1994). The LBVI is a small migratory songbird that nests in Southern California. This species is a summer resident of Southern California and breeds in willow thickets and other dense, low riparian growths in lowlands and lower portions of canyons. Approximately 38,000 ac (15,378.0 ha) of critical habitat was designated for the LBVI in 1994. The critical habitat occurs in 10 areas throughout Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, and San Diego Counties. Approximately 49 percent of the LBVI population in the United States occurred within these 10 areas in 1994. Critical habitat for the LBVI occurs on the Santa Ynez River, Santa Clara River, Santa Ana River, Santa Margarita River, San Luis Rey River, Sweetwater River, San Diego River, Tijuana River, Coyote Creek, and Jamul-Dulzura Creeks. There is no critical habitat within the BSA or its vicinity (USFWS 1994).

#### 4.3.4.1. SURVEY RESULTS

Focused surveys were conducted by LSA in 2011 to determine the presence of LBVI within the BSA (Appendix F). No LBVI were observed during the surveys. One tributary to San Juan Creek at the northeast end of the BSA was found to have potentially suitable habitat for LBVI (see Figure 2 of the LBVI report, Appendix E).

#### 4.3.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

The following measures will be incorporated to avoid and minimize impacts to LBVI:

- Prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around riparian/riverine vegetation adjacent to the project footprint to designate ESAs to be preserved. No grading or fill activity of any type will be permitted within these ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment will be operated in a manner so as to prevent accidental damage to nearby preserved areas. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within these protected zones. Silt fence barriers will be installed at the ESA boundary to prevent accidental deposition of fill material in areas where vegetation is immediately adjacent to planned grading activities.
- In order to avoid impacts to nesting birds, any native vegetation removal or tree (native or exotic) trimming activities will occur outside of the nesting bird season (February 15–August 31). In the event that vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a preconstruction survey to identify the locations of nests. Should nesting birds be found, an exclusionary buffer will be established by the qualified biologist. This buffer should be clearly marked in the field by construction personnel under guidance of the qualified biologist, and construction or clearing will not be conducted within this zone until the qualified biologist determines that the young have fledged or the nest is no longer active.

#### 4.3.4.3. PROJECT IMPACTS

The proposed project is not expected to directly impact this species provided the avoidance and minimization measures described above are implemented. However, the proposed project may have indirect and temporary impacts to LBVI through the loss of potential habitat. Therefore, project impacts for this species are the same as those for the riparian/riverine natural community described in Section 4.1.2.3.

#### 4.3.4.4. COMPENSATORY MITIGATION

Due to the measures described above, the proposed project is not expected to directly affect this species; therefore, specific compensatory mitigation is not warranted.

#### 4.3.4.5. CUMULATIVE EFFECTS

Cumulative effects to LBVI are expected through temporary impacts to potential habitat. As a result, cumulative effects to this species are the same as those for the riparian/riverine natural community described in Section 4.1.2.5.

### 4.3.5. Discussion of Ringtail

The ringtail (often referred to as ring tail cat, ring-tailed cat, or miner's cat, and mistakenly called a civet cat) is a mammal in the raccoon family. Slightly smaller than a house cat, the ringtail is a nocturnal omnivore that is native to arid regions of North America. A characteristically shy animal, the ringtail is an excellent climber and can be found nesting in hollow trees in rocky, desert habitat, or in rocky habitat associated with water.

#### 4.3.5.1. SURVEY RESULTS

Ringtail was not observed within the BSA during wildlife surveys conducted in 2011.

#### 4.3.5.2. AVOIDANCE AND MINIMIZATION EFFORTS

Due to its preference for nesting in hollow trees or in rocky habitat associated with water, the avoidance and minimization efforts for ringtail are the same as those described above for oak woodland and riparian/riverine natural communities. Ringtails den from May to July, with young potentially remaining in the den through August. Therefore, avoiding tree trimming or tree removal during the bird nesting season (February 15–August 31) provides full avoidance of the ringtail denning season.

In the event that vegetation clearing is necessary during the ringtail's denning season, a qualified biologist will conduct a preconstruction survey to identify potential locations of dens. Should nesting ringtails be found, an exclusionary buffer will be established by the qualified biologist. This buffer will be clearly marked in the field by construction personnel under the guidance of the qualified biologist, and construction or clearing shall not be conducted within this zone until the qualified biologist determines that the den is no longer active.

#### 4.3.5.3. PROJECT IMPACTS

The proposed project is not expected to directly impact this species as a result of the avoidance and minimization measures outlined for the oak woodland and riparian/ riverine natural communities. However, the proposed project is expected to have indirect and temporary impacts to ringtail through the loss of potential habitat. Therefore, project impacts for this species are the same as those described for the oak

woodland and riparian/riverine natural communities in Sections 4.1.1.3 and 4.1.2.3, respectively.

#### 4.3.5.4. COMPENSATORY MITIGATION

Due to the measures described above, the proposed project is not expected to directly affect this species; therefore, specific compensatory mitigation is not warranted. However, because this species occurs within oak woodland and riparian/riverine habitats, compensatory mitigation described for those natural communities will benefit ringtail as well.

#### 4.3.5.5. CUMULATIVE EFFECTS

Cumulative effects to ringtail are expected through the loss and degradation of potential habitat. As a result, cumulative effects to this species are the same as those described for the Natural Communities of Special Concern.

### 4.3.6. Discussion of Yuma Myotis, Small-footed Myotis, and Western Mastiff

Yuma myotis, designated a California Special Animal, is a small bat that is gray or brown to pale tan in color and occurs in a variety of habitats, including riparian, forests, and arid scrublands and deserts throughout California. It is usually associated with rivers and streams, feeding primarily on aquatic insects. Yuma myotis roosts in bridges, buildings, cliff crevices, caves, mines, and trees.

The small-footed myotis, also given a California Special Animal designation, occurs throughout much of the western United States, where it occupies a variety of habitats. This species feeds among trees or over brush and roosts in cavities of cliffs, trees, or rocks, and in caves or mineshafts.

The western mastiff bat, the largest bat in the United States, is a California Species of Special Concern. This species is a wide-ranging and high-flying insectivore that typically forages in open areas with high cliffs. It roosts in crevices in small colonies. Due to its large size, it needs an approximate 6 ft (1.83 m) drop in order to gain flight from its roost.

#### 4.3.6.1. SURVEY RESULTS

A Bat Habitat Suitability Assessment was conducted in July, August, and September 2011 (Appendix G). This assessment was conducted to ascertain the potential for bat foraging and roosting activity within the study area. Potential foraging habitat was assessed throughout the project area on the basis of vegetation composition, existence

of adjacent habitat, and accessibility, while potential roosting sites were identified through the examination of large trees, culvert structures, and rocky outcrops for suitable crevices and roosting habitat, as well as for the presence of bat sign (e.g., guano or urine staining). Large trees suitable for foliage-roosting species are prevalent within the BSA, but roosting activity at these locations cannot be confirmed due to the nature of this roosting behavior (these species tend to roost singly and beneath leaves, and may roost in a different location each night).

Potential day roosting sites were observed throughout the project area; however, no confirmed day roosting sites were located during the assessment. Night roosting at three culvert structures was confirmed by the presence of guano during the assessment.

The majority of the vegetation within the project area is comprised of oak woodland, and native herbaceous and shrub species are present adjacent to many of the culverts. These areas and their associated insect fauna may provide foraging habitat for many bat species.

Identification of the roosting bat species was difficult due to the proximity of the rock crevice roosts to the roadway and its vehicular traffic, which presented inherent danger to the investigating biologists; therefore, additional species may be present within these structures that were not adequately visible at the time of the assessment.

Yuma myotis and small-footed myotis were detected acoustically near potential tree roost locations during the nighttime surveys. Western mastiff were detected at high altitudes above the central and eastern portions of the BSA during ARTO surveys.

#### 4.3.6.2. AVOIDANCE AND MINIMIZATION EFFORTS

The following measures will be incorporated to avoid and minimize impacts to special-status bat species:

- A qualified bat biologist will survey the project area in June, prior to construction, to assess the potential for its use as a maternity roost, since maternity roosts are generally formed in late spring. If a June survey is not feasible due to contract award and/or the timing of construction, a qualified bat biologist will determine an appropriate alternative time of year for the survey. Project ground-disturbing activities shall not be initiated until this survey is complete.
- The qualified bat biologist shall also perform preconstruction surveys, since bat roosts can change seasonally. The surveys shall include a combination of structure

inspection, sampling, exit counts, and acoustic surveys. If a roost is found, the animals shall be excluded and the roosting materials removed immediately so that the bats cannot return, forcing the bats to find alternative roost sites.

- Prior to the initiation of construction/excavation activities along the road cut slopes, a qualified bat biologist will inspect accessible crevices during the day using a fiber-optic scope or similar instrument and confirm that no bats are present within those crevices. If the absence of bats is confirmed in the crevices, they will be sealed that same day using a method approved by the qualified bat biologist; methods may include (but are not limited to) sealing of individual crevices using exclusionary materials or the use of fine-weave mesh netting along relevant sections of the road cut slope. Crevice inspection and sealing activities shall occur outside of the maternity season (May–August) in order to avoid project delays.
- Tree removal shall be completed between September and November to avoid hibernating bats (December–February) and maternity season (May–August) if feasible. If this is not feasible, bat exclusion devices will need to be installed under the supervision of a qualified biologist. Such exclusion efforts must be continued to keep the structures free of bats until the completion of construction. All bat exclusion techniques shall be coordinated between the District Biologist and the resource agencies.
- A qualified biologist will monitor all construction activities within and adjacent to this sensitive habitat type to ensure that the construction does not encroach into adjacent areas. In addition, the biological monitor should be present during vegetation clearing and grading activities to relocate any sensitive wildlife species. The qualified biologist shall provide quarterly monitoring reports documenting compliance with the avoidance and minimization measures. The report shall be submitted to the Department and the implementing resource agencies.
- Any removal of oaks, snags, or large tree limbs containing cavities or crevices shall be removed in two stages: on Day 1, branches identified by a qualified bat biologist will be removed; on Day 2, the remainder of the tree or tree limb will be removed.
- Any removal of rock slopes identified as having suitable roost crevices shall be removed in two stages: on Day 1, rock slopes up to within of 50 ft (15.24 m) of crevices will be cut or excavated; on Day 2, the remainder of the rock slope can be removed.

- To avoid direct mortality to bats roosting in areas subject to effects from construction activities, any structure with potential bat habitat will have temporary bat exclusion devices installed under the supervision of a qualified bat biologist prior to the initiation of construction activities. Exclusion should be conducted during the fall (September or October) to avoid trapping flightless young inside during the summer months or hibernating individuals during the winter. Such exclusion efforts must be continued to keep the structures free of bats until the completion of construction. Replacement roosting habitat may also be needed to minimize effects to excluded bats. All bat exclusion techniques will be coordinated between the District Biologist and the resource agencies. Any placement of exclusions outside the months of September and October will be coordinated among the District Biologist, project engineer, and resource agencies.
- Prior to the start of construction, a qualified bat biologist will verify that the final design plans include suitable designs and specifications for bat exclusions and habitat replacement structures that appropriately reflect minimization and mitigation measures. If structural features providing existing roosting habitat cannot be permanently retained following construction, the installation of alternative roosting habitat may be required and will be done, if required to reduce the effects of the project on bats' long-term use of the structure. When feasible, on-structure replacement habitat will be conducted as it is more ecologically effective than off-structure replacement habitat.

#### 4.3.6.3. PROJECT IMPACTS

Impacts to Yuma myotis, small-footed myotis, and western mastiff would include temporary indirect disturbance (such as noise, dust, night lighting, and human encroachment) from construction. Furthermore, other permanent indirect issues associated with human encroachment, such as the introduction of nonnative species and trash, would permanently contribute to the degradation of foraging habitat (i.e., riparian/riverine vegetation) in the vicinity.

In addition, construction could temporarily impede access to roost sites (existing and future) in the crevices of culverts and structures. Only a small portion of roosting habitat (existing and future) may be permanently altered by the proposed project. However, the widening and modification of culverts and structures will more likely increase future potential roosting habitat. Because of this, the project is not expected to substantially affect the bats' long-term use of the structures.

#### 4.3.6.4. COMPENSATORY MITIGATION

Due to the measures described above, the proposed project is not expected to directly affect these species; therefore, specific compensatory mitigation is not warranted. In addition, compensatory mitigation described in previous sections for natural communities and wildlife will likely benefit Yuma myotis, small-footed myotis, and western mastiff by enhancing native vegetation and increasing foraging opportunities.

#### 4.3.6.5. CUMULATIVE EFFECTS

Because these species occupy the riparian/riverine natural community, cumulative effects to Yuma myotis, small-footed myotis, and western mastiff are the same as those described above for the riparian/riverine natural community.

### 4.3.7. Discussion of Special-status Coastal Sage Scrub and Chaparral Animal Species

Special-status CSS and chaparral species with the potential to occur in the BSA include coast range newt, San Diego banded gecko, rosy boa, silvery legless lizard, Coronado Island skink, San Diego ringneck snake, coast patch-nosed snake, coastal western whiptail, orange-throated whiptail, red-diamond rattlesnake, Allen's hummingbird, Costa's hummingbird, black chinned sparrow, Bell's sage sparrow, southern California rufous-crowned sparrow, Lawrence's goldfinch, San Diego desert woodrat, Dulzura pocket mouse, and northwestern San Diego pocket mouse.

#### 4.3.7.1. SURVEY RESULTS

Although none of these species were observed within the BSA, it is possible for them to move into the BSA prior to construction. Suitable habitat exists within the BSA for these species.

#### 4.3.7.2. AVOIDANCE AND MINIMIZATION EFFORTS

Because these species occupy the CSS natural community, avoidance and minimization efforts for special-status CSS and chaparral animal species are the same as those described for the CSS natural communities in Section 4.1.3.2.

#### 4.3.7.3. PROJECT IMPACTS

The proposed project is not expected to directly impact any of these species as a result of the avoidance and minimization measures described in Section 4.1.3.2. However, the proposed project is expected to have indirect and temporary impacts to them through the loss of potential habitat. Therefore, project impacts for these species are the same as those described for the CSS natural community in Section 4.1.3.3.

#### 4.3.7.4. COMPENSATORY MITIGATION

Due to the avoidance and minimization measures described in Section 4.1.3.2, the proposed project is not expected to affect these species; therefore, specific compensatory mitigation is not warranted.

However, on February 3, 1999, President Clinton signed EO 13112, requiring federal agencies to combat the introduction or spread of invasive species in the United States. Therefore, in compliance with EO 13112, temporarily impacted areas would be revegetated with plant species that prevent the introduction or spread of invasive species. In areas adjacent to native vegetation, the use of plant species native to the vicinity is highly recommended. This will include revegetation with CSS species.

#### 4.3.7.5. CUMULATIVE EFFECTS

Incremental cumulative effects to these species will result through the loss and degradation of available habitat. Because of this, cumulative effects to these species are the same as those described in the CSS natural community in Section 4.1.3.5.

### 4.3.8. Discussion of Special-status Grassland and Open Habitat Animal Species

Special-status grassland and open habitat species with the potential to occur in the BSA include white-tailed kite, coast horned lizard, grasshopper sparrow, western spadefoot toad, burrowing owl, ferruginous hawk, merlin, northern harrier, loggerhead shrike, California horned lark, lark sparrow, San Diego black-tailed jackrabbit, and American badger.

#### 4.3.8.1. SURVEY RESULTS

Although none of these species were observed within the BSA during the surveys conducted in 2011, it is possible for them to move onto the site prior to construction. Some suitable habitat exists within the BSA.

#### 4.3.8.2. AVOIDANCE AND MINIMIZATION EFFORTS

The following measures will be incorporated to avoid and minimize impacts to special-status grassland and open habitat animal species:

- In order to avoid impacts to nesting birds, any native or exotic vegetation removal or tree-trimming activities will occur outside of the nesting bird season (February 15–August 31). In the event that vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a preconstruction survey to identify the locations of nests. Should nesting birds be found, an

exclusionary buffer will be established by the qualified biologist. This buffer shall be clearly marked in the field by construction personnel under guidance of the qualified biologist, and construction or clearing will not be conducted within this zone until the qualified biologist determines that the young have fledged or the nest is no longer active.

- In order to ensure that any burrowing owls or American badgers that may occupy the site in the future are not affected by construction activities, preconstruction surveys will be required prior to any phase of construction. Burrowing owl preconstruction surveys are also required in order to comply with the federal Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code. The American badger survey can be conducted simultaneously. If any of the preconstruction surveys determine that burrowing owls are present, one or more of the following mitigation measures may be required: (1) avoidance of active nests and surrounding buffer area during construction activities; (2) passive relocation of individual owls; (3) active relocation of individual owls; and (4) preservation of on-site habitat with long-term conservation value for the owl. The specifics of the required measures shall be coordinated between the District Biologist and the resource agencies.

#### 4.3.8.3. PROJECT IMPACTS

With the exception of nesting/burrowing birds, should any of these species be present within the grassland or open habitats, they are expected to move out of the area during construction. Because of this, in conjunction with the avoidance and minimization measure described above, the proposed project is not expected to directly impact these species.

#### 4.3.8.4. COMPENSATORY MITIGATION

No compensatory mitigation is warranted for these special-status grassland and open habitat species, since application of the avoidance and minimization efforts is expected to preclude direct and indirect impacts to these species.

#### 4.3.8.5. CUMULATIVE EFFECTS

Although the grassland and open areas within the project area are nonnative, subsequent development would replace this vegetation with impervious areas. Therefore, the cumulative effects of the proposed project, in combination with reasonably foreseeable development (e.g., other widening projects) in the vicinity, may incrementally contribute to cumulative effects to these species through the loss of potential habitat.

## 4.3.9. Discussion of Special-status Riparian and Aquatic Animal Species

Special-status riparian and aquatic animal species with the potential to occur in the BSA include oak titmouse, southwestern pond turtle, California mountain kingsnake (San Diego population), yellow warbler, and yellow-breasted chat.

### 4.3.9.1. Survey Results

Oak titmouse was observed within the BSA and yellow-breasted chat was detected several hundred feet outside the BSA during surveys conducted in 2011. Although none of the other special-status riparian and aquatic animal species were observed within or adjacent to the BSA during the 2011 surveys, it is possible for them to move onto the site prior to construction. While much of the habitat on site is disturbed, some suitable habitat exists within the BSA.

### 4.3.9.2. Avoidance and Minimization Efforts

Because these species occupy the riparian/riverine natural community, avoidance and minimization efforts for special-status riparian and aquatic animal species are the same as those described for the riparian/riverine natural communities in Section 4.1.2.2.

### 4.3.9.3. Project Impacts

The proposed project is not expected to directly impact any of these species as a result of the avoidance and minimization measures described above. However, the proposed project is expected to have indirect and temporary impacts to them through the loss of potential habitat. Therefore, project impacts for these species are the same as those described for the riparian/riverine natural community in Section 4.1.2.3.

### 4.3.9.4. Compensatory Mitigation

Due to the avoidance and minimization measures described in Section 4.1.2.2, the proposed project is not expected to affect these species; therefore, specific compensatory mitigation is not warranted. In addition, compensatory mitigation described for the riparian/riverine natural community in Section 4.1.2.4 will benefit these species by enhancing native vegetation and increasing foraging opportunities.

### 4.3.9.5. Cumulative Effects

Incremental cumulative effects to these species will result through the loss and degradation of available habitat. Because of this, cumulative effects to these species are the same as those described in the riparian/riverine natural community in Section 4.1.2.5.

## 4.3.10. Discussion of Special-status Tree and Crevice Dwelling Animal Species

Special-status tree and crevice dwelling animal species (i.e. bats) with the potential to occur in the BSA include pallid bat, Mexican long-tongued bat, western mastiff bat, western red bat, and pocketed free-tailed bat.

### 4.3.10.1. Survey Results

With the exception of the Yuma myotis and small-footed myotis discussed above, no other special-status bat species were definitively detected during the Bat Habitat Suitability Assessment. However, it was determined at that time that suitable roosting and foraging habitat exists within the BSA for all of the special-status bat species and that additional studies may be warranted.

### 4.3.10.2. Avoidance and Minimization Efforts

Avoidance and minimization efforts for special-status bat species are the same as those described for the Yuma myotis, small-footed myotis, and western mastiff above.

### 4.3.10.3. Project Impacts

Project impacts for special-status bat species are the same as those described for the Yuma myotis, small-footed myotis, and western mastiff above.

### 4.3.10.4. Compensatory Mitigation

Due to the measures described for the Yuma myotis, small-footed myotis, and western mastiff in Section 4.3.7.2, the proposed project is not expected to affect these species; therefore, specific compensatory mitigation is not warranted. In addition, compensatory mitigation described in previous sections for natural communities and wildlife will benefit these species by enhancing native vegetation and increasing foraging opportunities.

### 4.3.10.5. Cumulative Effects

Because they occupy similar habitat types, cumulative effects to special-status bat species are the same as those described for the Yuma myotis, small-footed myotis, and western mastiff in Section 4.3.7.5.

## 4.4. Summary of Avoidance and Minimization Measures

The following is a summary of the avoidance and minimization measures discussed in the above sections. These measures will be incorporated to avoid and minimize impacts to sensitive biological resources:

1. Prior to clearing or construction, highly visible barriers (such as orange construction fencing) and, as needed, silt fencing will be installed around the protected zone of any oak tree, oak habitat, riparian/riverine vegetation, and CSS and designated as ESAs to be preserved. The protected zone will extend 5 ft (1.52 m) outside of the dripline or 15 ft (4.57 m) from the trunk of the tree, whichever is greater, unless the area includes a road shoulder or existing asphalt. In these instances, the road shoulder or existing asphalt will not be included in the ESA. No grading or fill activity of any type will be permitted within the ESA. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment shall be operated in a manner so as to prevent accidental damage to nearby oaks. No structure of any kind, or incidental storage of equipment or supplies, shall be allowed within the ESA. Silt fence barriers will be installed at the ESA boundary to prevent accidental deposition of fill material in areas where trees are immediately adjacent to planned construction activities.
2. In order to avoid impacts to nesting birds, any native vegetation removal or tree (native or exotic) trimming activities will occur outside of the nesting bird season (February 15–August 31). In the event that vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a preconstruction survey to identify the locations of nests. Should nesting birds be found, an exclusionary buffer will be established by the qualified biologist. This buffer will be clearly marked in the field by construction personnel under guidance of the qualified biologist, and construction or clearing shall not be conducted within this zone until the qualified biologist determines that the young have fledged or the nest is no longer active.
3. Inspection and cleaning of construction equipment will be performed to minimize the importation of nonnative plant material, and eradication strategies (i.e., weed abatement programs) will be employed should an invasion occur.
4. Construction activities should occur outside the rainy season (October–May) to ensure that sedimentation within the drainage does not occur during construction activities. If construction must occur during the rainy season, then protective measures include the preparation and implementation of a SWPPP and BMPs.

The SWPPP and BMPs must include measures to keep sediment out of the creek during and after storm events (for example, excavation spoils being stored outside the creek). In addition, for the protection of sensitive resources, including sensitive species, conditions regarding dust, noise, lighting, and other construction monitoring activities shall be outlined in the SWPPP and BMPs.

5. Immediately prior to construction, the qualified biologist shall provide an employee education program for listed species that may be affected by project work activities for all personnel who will be working on site during construction.
6. No fueling, lubrication, storage, or maintenance of construction equipment within 150 ft (46 m) of the CDFW or USACE jurisdictional areas is permitted. Spoil sites shall not be located within the CDFW or USACE jurisdictional areas, or in areas where it could be washed into San Juan Creek or its tributaries.
7. To reduce impacts to ARTO, all construction-related activities shall be confined to the proposed impact boundaries by installing silt fencing along the boundary to prevent any construction activities from encroaching into adjacent areas and to prevent ARTO from moving into the construction area. Fencing shall be approximately 2 ft (0.61 m) in height, 1 ft (0.31 m) of which shall be buried below the ground surface. Fencing shall be installed at least 14 days prior to the initiation of construction activities and shall be of appropriate material to exclude ARTO from the construction site. A qualified biologist shall survey the area inside the enclosure for a minimum of 10 nights prior to construction to relocate any toads observed within the construction impact area. ARTO found by the qualified biologist within the construction area shall be removed and relocated in suitable habitat either upstream or downstream of the project area. The qualified biologist will prepare temporary storage prior to the capture of toads. Any biologists handling ARTO must be authorized to do so by the appropriate agencies. In addition, construction access points shall be limited in proximity of this habitat type to the maximum extent feasible. During all construction activities, the construction contractor will take the appropriate measures to ensure that no waste material is discharged into the perennial watercourse. Trash and debris deposits adjacent to this sensitive habitat type will be disposed of daily. All silt fence shall be removed as a last order of work.
8. A qualified biologist will monitor all construction activities within and adjacent to ARTO sensitive habitat areas, as well as sensitive habitat for bat roosting, to ensure that the construction does not encroach into adjacent areas. In addition, the biological monitor should be present during vegetation clearing and grading activities to relocate any sensitive wildlife species. The qualified biologist shall

provide quarterly monitoring reports documenting compliance with the avoidance and minimization measures. The report shall be submitted to the Department and the applicable resource agencies.

9. The construction contractor shall cover grubbing spoils and other grading debris with plastic sheeting to prevent ARTO and other toad species from opportunistically burrowing in these exposed and friable soils. The sheeting shall be placed on the soils prior to sunset and shall remain in place during nighttime hours. The areas where this measure will be implemented shall be determined by a qualified biologist in coordination with the USFWS.
10. No equipment or vehicles shall be driven on access roads adjacent to occupied ARTO habitat after sunset or prior to dawn. If the site must be accessed during these hours, a qualified biologist permitted by the appropriate resource agencies to handle ARTO must survey in front of the vehicle to identify and relocate individuals found on the road.
11. ARTO are nocturnal and can be particularly affected by nighttime artificial lighting. In order to minimize and avoid the effects of lighting on wildlife, construction lighting during nighttime construction activities shall be shielded away from natural areas, as feasible.
12. The District Biologist, in coordination with the engineer, will examine and approve all staging and storage areas.
13. In the event that vegetation clearing is necessary during the ringtail's denning season, a qualified biologist will conduct a preconstruction survey to identify potential locations of dens. Should nesting ringtails be found, an exclusionary buffer will be established by the qualified biologist. This buffer will be clearly marked in the field by construction personnel under guidance of the qualified biologist, and construction or clearing shall not be conducted within this zone until the qualified biologist determines that the den is no longer active.
14. A qualified bat biologist will survey the project area in June, prior to construction, to assess the potential for its use as a maternity roost, since maternity roosts are generally formed in late spring. If a June survey is not feasible due to contract award and/or the timing of construction, a qualified bat biologist will determine an appropriate alternative time of year for the survey. Project ground-disturbing activities shall not be initiated until this survey is complete. The qualified bat biologist shall also perform preconstruction surveys, since bat roosts can change seasonally. The surveys shall include a combination of structure inspection, sampling, exit counts, and acoustic surveys. If a roost is found, the animals shall be excluded and the roosting materials removed

immediately so that the bats cannot return, forcing the bats to find alternative roost sites.

15. Tree removal shall be completed between September and November to avoid hibernating bats (December–February) and maternity season (May–August) if feasible. If this is not feasible, bat exclusion devices will need to be installed under the supervision of a qualified biologist. Such exclusion efforts must be continued to keep the structures free of bats until the completion of construction. All bat exclusion techniques shall be coordinated between the District Biologist and the resource agencies.
16. Prior to the initiation of construction/excavation activities along the road cut slopes, a qualified bat biologist will inspect accessible crevices during the day using a fiber-optic scope or similar instrument and confirm that no bats are present within those crevices. If the absence of bats is confirmed in the crevices, they will be sealed that same day using a method approved by the bat biologist; methods may include (but are not limited to) sealing of individual crevices using exclusionary materials or the use of fine-weave mesh netting along relevant sections of the road cut slope. Crevice inspection and sealing activities shall occur outside of the maternity season (May–August) in order to avoid project delays.
17. Any removal of oaks, snags, or large tree limbs containing cavities or crevices shall be removed in two stages: on Day 1, branches identified by a qualified bat biologist will be removed; on Day 2, the remainder of the tree or tree limb will be removed.
18. Any removal of rock slopes identified as having suitable roost crevices shall be removed in two stages: on Day 1, rock slopes up to within 50 ft (15.24 m) of crevices will be cut or excavated; on Day 2, the remainder of the rock slope can be removed.
19. In order to ensure that any burrowing owls or American badgers that may occupy the site in the future are not affected by construction activities, preconstruction surveys will be required prior to any phase of construction. Burrowing owl preconstruction surveys are also required in order to comply with the federal MBTA and the California Fish and Game Code.
20. The American badger survey can be conducted simultaneously. If any of the preconstruction surveys determine that burrowing owls are present, one or more of the following mitigation measures may be required: (1) avoidance of active nests and surrounding buffer area during construction activities; (2) passive relocation of individual owls; (3) active relocation of individual owls; and

(4) preservation of on-site habitat with long-term conservation value for the owl. The specifics of the required measures shall be coordinated between the District Biologist and the resource agencies.

21. Equipment maintenance, lighting, and staging must be in areas designated by a qualified wildlife biologist, away from wildlife corridor entrances.
22. Hours of construction will be limited to daylight hours to ensure utilization of wildlife corridors, except when nighttime work is necessary (i.e., for worker safety). If work must be done at night, noise and direct lighting would be directed away from the culvert to the best extent feasible.
23. During non-working hours, the culverts will be kept clear of all equipment or structures that could potentially serve as barriers to wildlife passage.
24. The existing culvert structures that would be extended or modified by the proposed project would be designed so that they would be at least as compatible with wildlife usage as the existing culvert. For example, culvert entrances would have textured concrete drawdown pads.

# Chapter 5. Results: Permits and Technical Studies for Special Laws or Conditions

## 5.1. Federal Endangered Species Act Consultation Summary

Endangered and threatened wildlife species, as well as designated critical habitat, are protected from unauthorized "take" pursuant to Section 7 of FESA. "Take," as defined by ESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or attempt to engage in any such conduct.

The USFWS may authorize take only when that take is incidental to, but not the purpose of, an otherwise lawful activity. The three means of authorizing such takes are as follows:

- 10a Permit: Pursuant to Section 10(a) of the Act, if an HCP has been prepared pursuant to the regulations at 50 CFR 17.22 (b)(2) and 50 CFR 17.32 (b)(2) and is approved by USFWS. This process requires documentation per NEPA, as well as public noticing of the HCP by the USFWS.
- Formal Section 7 Consultation between the USFWS and a federal project sponsor or permitting agency. In this case, the FHWA is the project sponsor, although the Department is authorized to initiate Section 7 consultation on behalf of the FHWA. Formal Section 7 consultation occurs when a project "may affect" a listed species or designated critical habitat. Incidental take can be authorized via a statement in the Biological Opinion that results from formal Section 7 consultation.
- Section 4(d) Special Rules: for threatened species only.

The proposed project includes potential adverse effects to the federally endangered ARTO and its designated critical habitat. Critical habitat for ARTO is present on both sides of SR-74 throughout the eastern two-thirds of the BSA, as well as within San Juan Creek and its tributary drainages as shown in Appendix M.

The MSAA/HCP acknowledges the need for future road improvements along this stretch of Ortega Highway and authorizes participating entities "take" of listed species as part of these anticipated road improvements. Although the Department is not a participating entity, the impacts proposed for this project are not inconsistent with those identified in the MSAA/HCP for the anticipated road improvements. At

the very least, informal Section 7 consultation between the Department, authorized to act on behalf of the FHWA, and the USFWS may be required to address the potential impacts to designated critical habitat for the federally listed ARTO. In this case, the USFWS is likely to concur with a conclusion that the proposed action "may affect but is not likely to adversely affect" any federally listed species.

## 5.2. California Endangered Species Act Consultation Summary

The CESA protects plant and animal species listed as rare, threatened, or endangered. The CDFW authorizes take of endangered, threatened, or candidate species through the provisions of Sections 2081 and 2081.1 of the Fish and Game Code. LBVI and SWWF are the State-listed species with potential to occur within the proposed project area. Survey findings were negative for both species and suitable habitat was absent or of poor quality within the BSA.

A Section 2080 permit from the CDFW is not expected to be required for the proposed project, as resources subject to CESA have been determined to be absent from the BSA.

## 5.3. Wetlands and Other Waters Coordination Summary

The findings and conclusions of the location and extent of wetlands and other waters subject to regulatory jurisdiction (or lack thereof) represent the professional opinion of LSA. These findings and conclusions should be considered preliminary until verified by the USACE and CDFW. Compensatory mitigation will be determined as part of the regulatory permit process and may involve habitat restoration within Department ROW, at agency-approved off-site locations, such as invasive plant removal in San Juan Creek or coordination with the City of San Juan Capistrano, payment of in-lieu fees , and/or participation in agency-approved mitigation banks.

### 5.3.1. USACE Jurisdiction

As described in the Jurisdictional Delineation Report (Appendix H), there are several drainages on site that connect directly or indirectly to San Juan Creek. San Juan Creek has a relatively permanent (at least 3 months) flow during the year and flows into the Pacific Ocean, a traditional navigable water (TNW). Drainages that appear natural or appear to function in a capacity of more than just a storm drain are believed to be potentially jurisdictional.

There are some additional man-made drainages that appear to be roadside drainage ditches that function solely to convey storm water into the storm drain system. The USACE typically does not assert jurisdiction over these manmade roadside drainage ditches. However, the USACE does reserve the right to regulate these waters on a case-by-case basis. The locations of these drainages are also shown in Appendix A of the Jurisdictional Delineation Report.

The proposed project is expected to permanently impact approximately 0.015 ac (0.006 ha) and temporarily impact approximately 0.072 ac (0.029 ha) of nonwetland waters potentially subject to USACE jurisdiction.

As described in Section 2.1.6.1, San Juan Creek/Western San Mateo Creek Watershed Special Area Management Plan (San Juan Creek SAMP), if the project is found to be consistent with the San Juan Creek SAMP, a Letter of Permission (LOP) will be issued to authorize the discharge of dredged and/or fill materials into waters of the U.S. If the project is found not to be consistent with the San Juan Creek SAMP, an Individual Permit will be required. As part of the San Juan Creek SAMP process, selected Nationwide Permits (NWPs) have been revoked. Therefore, an NWP for the SR-74 Safety Project cannot be obtained.

### 5.3.2. CDFW Jurisdiction

All of the areas satisfying the USACE jurisdictional criteria for waters of the United States and adjacent wetlands, as described above, are also subject to CDFW jurisdiction pursuant to Section 1602 of the California Fish and Game Code. In addition, streambed banks and adjacent riparian areas extending beyond the limits of the USACE jurisdiction are considered subject to CDFW jurisdiction. See Appendix A of the Jurisdictional Delineation Report for the extent of CDFW jurisdiction.

The proposed project is expected to permanently impact approximately 0.533 ac (0.216 ha) and temporarily impact approximately 0.579 ac (0.234 ha) of streambed potentially subject to CDFW jurisdiction.

A CDFW Streambed Alteration Notification (SAN) is required for all activities resulting in impacts to streambeds and their associated riparian habitats, and a Streambed Alteration Agreement (SAA) may be needed. An SAA is expected to be required for this project.

### 5.3.3. RWQCB Jurisdiction

Since there is no public guidance on determining RWQCB jurisdictional areas, jurisdiction was determined based on the federal definition of wetlands (three-parameter) and other waters of the United States (OHWM) as recommended by the September 2004 Workplan. Therefore, the total impacts to potential RWQCB jurisdictional areas are the same as those for the USACE.

Upon a jurisdictional decision (concurrence) from the USACE, a Section 401 Water Quality Certification from the RWQCB will be required for the project based on the area defined in the jurisdictional determination from the USACE.

## 5.4. Invasive Species

Exotic plant species exist within the nonnative plant communities, in native plant communities, and in areas that have been disturbed by human uses. Exotic species are typically more numerous adjacent to roads and developed areas and frequently border ornamental landscape. In the past, these areas likely supported grasslands, oak woodland, CSS, and riparian habitats.

A total of 32 exotic plants occurring on California Invasive Plant Council's (Cal-IPC's) California Invasive Plant Inventory were identified. Of these species, there are 2 with an overall high rating, 18 with a moderate rating, and 12 with a limited rating. Invasive species that have severe ecological impacts are given a high rating. Species with a high rating identified within the BSA are: Fennel (*Foeniculum vulgare*) and foxtail chess (*Bromus madritensis*). These observations should not be considered all-inclusive.

In compliance with EO 13112, invasive species would be removed from the project work area and controlled during construction. In addition, affected areas would not be revegetated with plant species listed in Cal-IPC's California Invasive Plant Inventory with a high or moderate rating. In areas adjacent to native vegetation, the use of plant species native to the vicinity is highly recommended. In addition, inspection and cleaning of construction equipment would be performed to minimize the importation of nonnative plant material, and eradication strategies (i.e., weed abatement programs) would be employed should an invasion occur.

## 5.5. Migratory Bird Treaty Act

Native bird species and their nests are protected under the MBTA (16 United States Code [USC] 703-712). The MBTA states that all migratory birds and their parts

(including eggs, nests, and feathers) are fully protected. The MBTA prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase, or barter, any migratory bird, its eggs, parts, and nests, except as authorized under a valid permit.

EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies "taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a Memorandum of Understanding (MOU) with the Fish and Wildlife Service that promotes the conservation of migratory bird populations." In accordance with EO 13186 and the provisions of the MBTA, the following measures will be incorporated as described in Chapter 4:

- All vegetation clearing and tree removal activities would be conducted outside of the bird nesting season (February 15–August 31) to the best extent practicable. In the event that vegetation clearing is necessary during the nesting season, a qualified biologist would conduct a preconstruction survey to identify the locations of nests. Should nesting birds be found, an exclusionary buffer will be established by the qualified biologist. This buffer will be clearly marked in the field, and construction or clearing will not be conducted within this zone until the qualified biologist determines that the young have fledged or the nest is no longer active.

## 5.6. Wildlife Migration and Travel Corridors

Culverts and tunnels are linear and are regularly used by wildlife to either pass through or for temporary night roosting during foraging activities by some bat species. Culverts, particularly concrete culverts at a minimum of 36 in (91.4 cm), are used by small to midsized carnivores, small rodents, and reptile and amphibian species (Ruediger and DiGiorgio 2007). Bobcats in particular are comfortable using culverts at least 36 in (91.4 cm) in diameter and have used culverts 200 ft (60.96 m) long (Cain 1999). The project area has at least 20 culverts varying from 18 in to 10–12 ft (0.5 m to 3.05–3.65 m) in diameter, with most existing culverts measuring 24 in (45.7 cm to 61.0 cm) in diameter. The proposed project includes culvert removal and replacement at most culvert locations. Removal and replacement will likely benefit wildlife movement due to the associated debris and vegetation removal from culvert inlets and outlets. Additional benefits will occur if culverts at least 36 in (91.4 cm) in diameter are installed where replacements are required.

Fragmentation of habitat and movement corridors occurs when a proposed action results in a single, unified habitat area being divided into two or more areas in such a way that wildlife cannot move freely or without increased risk of predation or injury from one portion of the habitat to another. In this way, a habitat area becomes separated from another by an anomalous feature such as a road, building, or river. SR-74 is an existing roadway, so the proposed project would not further fragment habitat and does not include permanent installation or placement of barriers like sound walls, median barriers, or curbs that could impede wildlife movement. Therefore, the proposed widening project would have limited direct impacts.

However, the proposed widening may have temporary impacts. Construction lighting, noise, or dust may temporarily deter or disrupt wildlife movement across or under the road. In addition, grading would occur in the vicinity of the existing culverts. Temporary direct impacts would occur during construction due to the increased presence of equipment, structures, and construction personnel.

Because of this, the following measures will be incorporated:

- Equipment maintenance, lighting, and staging must be in areas designated by a qualified wildlife biologist, away from wildlife corridor entrances.
- Hours of construction will be limited to daylight hours to ensure utilization of wildlife corridors, except when nighttime work is necessary (i.e., for worker safety). If work must be done at night, noise and direct lighting would be directed away from the culvert to the best extent feasible.
- During non-working hours, the culverts will be kept clear of all equipment or structures that could potentially serve as barriers to wildlife passage.
- The existing culvert structures that would be extended or modified by the proposed project would be designed so that they would be at least as compatible with wildlife usage as the existing culvert. For example, culvert entrances would have textured concrete drawdown pads.

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# Appendix A USFWS Correspondence

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# Official Species-list: *Safety Project 0L720K on Ortega*

## Carlsbad Fish And Wildlife Office

Following is an official U.S. Fish and Wildlife Service species-list from the Carlsbad Fish And Wildlife Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "Safety Project 0L720K on Ortega". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on January 23, 2012, 12:37 PM. This information is summarized below.

Please reference our tracking number, 08ECAR00-2012-SLI-0146, in future reference to this project to assist in expediting the process.

Newer information based on updated surveys, changes in the abundance and distribution of listed species, changed habitat conditions, or other factors could change this list. Please feel free to contact the office(s) identified below if you need more current information or assistance regarding the potential presence of federally proposed, listed, or candidate species, or proposed or designated critical habitat. Please note that under the ESA, a species-list is valid for 90 days. Therefore, the Service recommends that you visit the IPaC site at regular intervals during project planning and implementation for updates to species-lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive this list. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

`http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF`

This list below only addresses federally proposed, listed, or candidate species and federally designated critical habitat. Please contact the appropriate State agencies for information regarding State species of special designation. Also, please feel free to contact the office(s) identified below if you would like information on other important trust resources (such as migratory birds) in your project area.

**This Species-list document is provided by:**

CARLSBAD FISH AND WILDLIFE OFFICE
6010 HIDDEN VALLEY ROAD
CARLSBAD, CA 92009
(760) 431-9440

**TAILS consultation code:** 08ECAR00-2012-SLI-0146

**Project type:** Transportation

**Project Description:** Antonio/La Pata to Cristianitos; widen shoulders, construct 12' turnout lanes (EB) and 15' turnout lanes (WB); replace/install MBGR; construct retaining walls & replace culverts

**Project location map:**


**Project coordinates:** MULTIPOLYGON (((-117.6194053 33.5194905, -117.5800948 33.5134823, -117.5802665 33.5133106, -117.6194053 33.5194905)))

**Project counties:** Orange, CA

## Endangered Species Act Species-list

Arroyo toad *(Bufo californicus)*

Listing Status: Endangered

Critical Habitat: Final designated

Coastal California gnatcatcher *(Polioptila californica californica)*

Listing Status: Threatened

Critical Habitat: Final designated

Least Bell's vireo *(Vireo bellii pusillus)*

Listing Status: Endangered

Riverside fairy shrimp *(Streptocephalus woottoni)*

Listing Status: Endangered

San Diego fairy shrimp *(Branchinecta sandiegonensis)*

Listing Status: Endangered

Critical Habitat: Final designated

Southwestern Willow flycatcher *(Empidonax traillii extimus)*

Listing Status: Endangered

Thread-Leaved brodiaea *(Brodiaea filifolia)*

Listing Status: Threatened

# Appendix B Botanical Survey Memorandum

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PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO
SOUTH SAN FRANCISCO

**MEMORANDUM**

**DATE:** March 6, 2012

**TO:** Gabriela Jauregui and Arianne Preite, Caltrans District 12

**FROM:** Stanley Spencer, Ph.D., LSA Associates Inc.

**SUBJECT:** Special-Status Plant Surveys, State Route 74 Safety Project from Antonio Parkway/ La Pata Road to Cristianitos Road; Caltrans 12-ORA-74, PM 2.93 to 5.06, EA 0L720K

A habitat suitability assessment and a special-status plant species survey was conducted throughout the California Department of Transportation (Caltrans) right-of-way (ROW) along Ortega Highway (State Route 74 [SR-74]) from Antonio Parkway/La Pata Road to Cristianitos Road, which is the Biological Study Area (BSA) for the focused plant surveys. Potentially suitable habitat was found for 24 plant species (Table A). All other special-status plant species documented during the literature search of the California Natural Diversity Database (CNDDB; search conducted on May 3, 2011) were determined to be absent based on lack of suitable habitat or because the site is outside the expected current range of the species.

On May 4, 2011, surveys for the 26 target species were initiated within the BSA by LSA botanist Stanley Spencer, with follow-up surveys on May 18 and June 29, 2011. The surveys were within the season when the target species would have been identifiable in the field, either by their flowers or by characteristics of their fruit or vegetative structures. The surveys were conducted on foot or with the aid of binoculars where foot access was not possible. The surveys were floristic in nature, and all species encountered were identified to the taxonomic level required to determine rarity status. All vascular plant species observed during the surveys were noted and are included in Table B. No target species or other special-status plant species were found during the survey.

## Table A. Plant Species with Potentially Suitable Habitat in the Biological Study Area

| Species | Habitat and Distribution | Activity Period |
|---|---|---|
| *Tortula californica*<br><br>**California screw-moss** | Moss of sandy soils in chenopod scrub and valley and foothill grassland. Elevations 10 to 1,460 meters (30 to 4,800 feet). Known only from Modoc, Kern, and western Riverside Counties, California. | Seasonally following rains |
| *Aphanisma blitoides*<br><br>**Aphanisma** | Sandy or clay soils on slopes or bluffs near the ocean, usually in coastal bluff scrub, coastal dunes, or coastal scrub, below 305 meters (1,000 feet) elevation. Known in California from Ventura, Santa Barbara, Los Angeles, Orange, and San Diego Counties. Also occurs in Mexico. | Blooms March through June (annual herb) |
| *Atriplex coulteri*<br><br>**Coulter's saltbush** | Alkaline or clay soils in ocean bluffs and ridgetops and alkaline low places in coastal bluff scrub, coastal dunes, coastal sage scrub, and valley and foothill grasslands below 460 meters (1,500 feet) elevation. In California, known only from Los Angeles, Orange, Santa Barbara, San Bernardino, San Luis Obispo, Ventura, and San Diego Counties. Also occurs in Mexico. Reports of this species from Riverside County are based on misidentifaction of *Atriplex serenana* ssp. *davidsonii* (*The Vascular Plants of Western Riverside County, California*. F. M. Roberts et al., 2004). | March through October (perennial herb) |
| *Brodiaea filifolia*<br><br>**Thread-leaved brodiaea** | Usually on clay or associated with vernal pools or alkaline flats; occasionally in vernally moist sites in fine soils (clay loam, silt loam, fine sandy loam, loam, loamy fine sand). Typically associated with needlegrass or alkali grassland or vernal pools. Occurs from 25 to 1,220 meters (80 to 4,000 feet) elevation. Known only from Los Angeles, Orange, Riverside, San Bernardino, San Diego, and San Luis Obispo Counties, California. | Blooms March through June (perennial herb) |
| *Brodiaea orcuttii*<br><br>**Orcutt's brodiaea** | Clay and some serpentine soils, usually associated with streams or vernal pools, from 30 to 1,700 meters (100 to 5,600 feet) elevation. In California known only from Riverside and San Diego Counties. Also occurs in Mexico. | May through July (perennial herb) |
| *Calochortus plummerae*<br><br>**Plummer's mariposa lily** | Sandy or rocky sites of (usually) granitic or alluvial material in valley and foothill grassland, coastal scrub, chaparral, cismontane woodland, and lower montane coniferous forest at 100 to 1,700 meters (300 to 5,600 feet) elevation. Known from the Santa Monica Mountains to San Jacinto Mountains in Riverside, San Bernardino, Orange, Los Angeles, and Ventura Counties, California. | Blooms May through July (perennial herb) |
| *Calochortus weedii* var. *intermedius*<br><br>**Intermediate mariposa lily** | Dry, open rocky slopes and rock outcrops in chaparral, coastal sage scrub, and grassland at 105 to 855 meters (340 to 2,800 feet) elevation. Known only from Los Angeles, Orange, Riverside, and San Bernardino Counties, California. In the western Riverside County area, this species is known from the hills and valleys west of Lake Skinner and Vail Lake (The Vascular Plants of Western Riverside County, California. F. M. Roberts et al., 2004). | May through July (perennial herb) |
| *Centromadia parryi* ssp. *australis*<br><br>**Southern tarplant** | In vernally wet areas such as edges of marshes and vernal pools, at edges of roads and trails, and in other areas of compacted, poorly drained, or alkaline soils where competition from other plants is limited, often due to disturbance, below 425 meters (1,400 feet) elevation. In California, known only from Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties. Also occurs in Mexico. | May through November (annual herb) |

## Table A. Plant Species with Potentially Suitable Habitat in the Biological Study Area

| Species | Habitat and Distribution | Activity Period |
|---|---|---|
| *Chaenactis glabriuscula* var. *orcuttiana*<br><br>**Orcutt's pincushion** | Sandy areas of coastal bluff scrub and coastal sand dunes below 100 meters (300 feet) elevation. In California, known only from Los Angeles, Orange (believed extirpated), San Diego, and Ventura Counties. Also occurs in Mexico. | Blooms January through August<br>(annual herb) |
| *Chorizanthe polygonoides* var. *longispina*<br><br>**Long-spined spineflower** | Generally clay soils in chaparral, coastal sage scrub, and grassland at 30 to 1,530 meters (100 to 5,000 feet) elevation. In California, known only from Orange, Riverside, Santa Barbara, and San Diego Counties. Also occurs in Mexico. | April through July<br>(annual herb) |
| *Comarostaphylis diversifolia* ssp. *diversifolia*<br><br>**Summer holly** | Chaparral or cismontane woodland at 30 to 790 meters (100 to 2,600 feet). In California, known only from Orange, Riverside, Santa Barbara, and San Diego Counties. Also occurs in Mexico. | April through June<br>(evergreen shrub) |
| *Dudleya blochmaniae* ssp. *blochmaniae*<br><br>**Blochman's dudleya** | Dry rocky places, often on clay or serpentine, in chaparral, coastal sage scrub, or grassland, below 450 meters (1,500 feet) elevation. In California, known only from Los Angeles, Orange, Santa Barbara, San Diego, San Luis Obispo, and Ventura Counties. Also occurs in Mexico. | May through June<br>(perennial herb) |
| *Dudleya multicaulis*<br><br>**Many-stemmed dudleya** | Heavy, often clay soils or around granitic outcrops in chaparral, coastal sage scrub, and grassland below 790 meters (2,600 feet) elevation. Known only from Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties. | Blooms April through July<br>(perennial herb) |
| *Dudleya viscida*<br><br>**Sticky dudleya** | Rocky areas in coastal bluff scrub, chaparral, coastal sage scrub, and cismontane woodland from 10 to 550 meters (30 to 1,800 feet) elevation. Known only from Orange and San Diego Counties, California. | May through June<br>(perennial herb) |
| *Eryngium pendletonensis*<br><br>**Pendleton button-celery** | Vernally mesic sites in coastal bluff scrub, valley and foothill grassland, and vernal pools at 15 to 110 meters (50 to 360 feet) elevation. Known only from San Diego County. | April through June<br>(perennial herb) |
| *Euphorbia misera*<br><br>**Cliff spurge** | Rocky sites within coastal bluff scrub, coastal sage scrub, and Mojavean desert scrub at 10 to 500 meters (30 to 1,600 feet) elevation. In California, known only from the Channel Islands, coastal Orange and San Diego Counties, and Riverside County deserts. Also occurs in Mexico. | December through August<br>(perennial herb) |
| *Harpagonella palmeri*<br><br>**Palmer's grapplinghook** | Clay soils in openings in coastal sage scrub, juniper woodland, and grassland below 830 meters (2,700 feet) elevation. In California, known only from Orange, Riverside, and San Diego Counties and the Channel Islands. Also occurs in Arizona and Mexico. | March through May<br>(annual herb) |
| *Horkelia cuneata* ssp. *puberula*<br><br>**Mesa horkelia** | Sandy or gravelly soils in chaparral, or rarely in cismontane woodland or coastal scrub at 70 to 825 meters (200 to 2,700 feet) elevation. Known only from San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Bernardino Counties, California. Believed extirpated from Riverside and San Diego Counties. | February through September<br>(perennial herb) |

## Table A. Plant Species with Potentially Suitable Habitat in the Biological Study Area

| Species | Habitat and Distribution | Activity Period |
|---|---|---|
| *Lepidium virginicum* var. *robinsonii*<br><br>**Robinson's pepper-grass** | Dry soils in coastal sage scrub and chaparral below 885 meters (2,900 feet) elevation. In California, known only from Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, and San Diego Counties and Santa Cruz Island. Also occurs in Mexico. | January through July (annual herb) |
| *Lycium brevipes* var. *hassei*<br><br>**Santa Catalina Island desert-thorn** | Deciduous shrub of coastal bluffs and slopes in coastal bluff scrub and coastal scrub at 10 to 300 meters (30 to 1000 feet) elevation. Known only from the Channel Islands (extirpated), one location on the Palos Verdes Peninsula in Los Angeles County, and one location in Orange County. | Blooms in June (deciduous shrub) |
| *Pentachaeta aurea ssp. allenii*<br><br>**Allen's daisy** | Grasslands and openings in coastal scrub from 75 to 520 meters (250 to 1,700 feet) elevation. Known only from Orange County, California. | March through June (annual herb) |
| *Quercus dumosa*<br><br>**Nuttall's scrub oak** | On sandy and clay loam soils near the coast within closed-cone coniferous forest, chaparral, and coastal scrub from 15 to 400 meters (50 to 1,300 feet) elevation. In California, known only from western Orange, Santa Barbara, and San Diego Counties. Also known from Baja California. | Year-round (evergreen shrub) |
| *Satureja chandleri*<br><br>**San Miguel savory** | Rocky areas in chaparral or oak woodland or at the margins of these communities in coastal sage scrub or grassland, at 110 to 1,210 meters (400 to 4,000 feet) elevation. Prefers moist rocky canyons with trees or large shrubs. Known only from Orange, Riverside, and San Diego Counties and Baja California, Mexico. | Blooms March through May (perennial herb) |
| *Senecio aphanactis*<br><br>**Rayless ragwort** | Openings (especially alkaline flats) in cismontane woodland, coastal sage scrub, and chaparral at 15 to 575 (800?) meters (50 to 1,900 [2,600?] feet) elevation. Known in California from Alameda, Contra Costa, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, Santa Barbara, Santa Clara, San Diego, San Luis Obispo, Solano, and Ventura Counties. Also occurs in Baja California. | Blooms January through April (annual herb) |

**Table B. Plant Species Observed During Focused Surveys**

| Scientific Name | Common Name |
|---|---|
| **POLYPODIOPHYTA** | **TRUE FERNS** |
| **Pteridaceae** | **Lip Fern family** |
| *Pellaea andromedifolia* | Coffee fern |
| **MAGNOLIOPHYTA: MAGNOLIOPSIDA** | **DICOT FLOWERING PLANTS** |
| **Amaranthaceae** | **Amaranth family** |
| *Amaranthus albus** | Tumbling pigweed |
| *Amaranthus* sp. | Pigweed |
| **Anacardiaceae** | **Sumac family** |
| *Malosma laurina* | Laurel sumac |
| *Rhus integrifolia* | Lemonade berry |
| *Schinus molle** | Peruvian pepper tree |
| *Toxicodendron diversilobum* | Poison oak |
| **Apiaceae** | **Carrot family** |
| *Conium maculatum** | Poison hemlock |
| *Daucus pusillus* | American wild carrot |
| *Foeniculum vulgare** | Fennel |
| *Sanicula crassicaulis* | Pacific blacksnakeroot |
| **Asclepiadaceae** | **Milkweed family** |
| *Asclepias eriocarpa* | Indian milkweed |
| *Asclepias fascicularis* | Narrow-leaved milkweed |
| **Asteraceae** | **Sunflower family** |
| *Achillea millefolium* | Common yarrow |
| *Acourtia microcephala* | Sacapellote |
| *Ambrosia psilostachya* | Western ragweed |
| *Artemisia californica* | California sagebrush |
| *Artemisia douglasiana* | Mugwort |
| *Baccharis pilularis* | Coyote brush |
| *Baccharis salicifolia* | Mulefat |
| *Brickellia californica* | California brickellbush |
| *Carduus pycnocephalus** | Italian Thistle |
| *Centaurea melitensis** | Tocalote |
| *Chrysanthemum coronarium** | Garland chrysanthemum |
| *Conyza canadensis* | Canadian horseweed |
| *Corethrogyne filaginifolia* | California aster |

**Table B. Plant Species Observed During Focused Surveys**

| Scientific Name | Common Name |
|---|---|
| *Cynara cardunculus** | Artichoke thistle |
| *Deinandra fasciculata* | Fascicled tarweed |
| *Erigeron foliosus* | Leafy daisy |
| *Hedypnois cretica** | Crete weed |
| *Heterotheca grandiflora* | Telegraph weed |
| *Isocoma menziesii* | Goldenbush |
| *Lactuca serriola** | Prickly lettuce |
| *Malacothrix saxatilis* | Cliff malacothrix |
| *Matricaria discoidea** | Disc mayweed |
| *Osmadenia tenella* | False rosinweed |
| *Picris echioides** | Bristly ox-tongue |
| *Pseudognaphalium californicum* | California rabbit-tobacco |
| *Pseudognaphalium luteoalbum** | Jersey cudweed |
| *Silybum marianum** | Milk thistle |
| *Sonchus asper** | Prickly sow thistle |
| *Sonchus oleraceus** | Common sow thistle |
| *Xanthium spinosum* | Spiny clotbur |
| *Xanthium strumarium* | Rough cockleburr |
| **Brassicaceae** | **Mustard family** |
| *Brassica nigra** | Black mustard |
| *Hirschfeldia incana** | Shortpod mustard |
| *Lepidium didymum** | Lesser wart-cress |
| *Nasturtium officinale* | Watercress |
| *Raphanus sativus** | Wild radish |
| *Sisymbrium irio** | London rocket |
| *Sisymbrium orientale** | Indian hedgemustard |
| **Cactaceae** | **Cactus family** |
| *Opuntia* cf. *oricola* | Chaparral pricklypear |
| *Opuntia littoralis* | Coastal prickleypear |
| **Caprifoliaceae** | **Honeysuckle family** |
| *Lonicera subspicata* | Honeysuckle |
| *Sambucus nigra* ssp. *cerulea* | Blue elderberry |
| **Caryophyllaceae** | **Pink family** |
| *Silene gallica** | Common catchfly |

**Table B. Plant Species Observed During Focused Surveys**

| Scientific Name | Common Name |
|---|---|
| **Chenopodiaceae** | **Saltbush family** |
| *Atriplex suberecta** | Peregrine saltbush |
| *Bassia hyssopifolia** | Five-hook bassia |
| *Chenopodium murale** | Nettleleaf goosefoot |
| *Kochia scoparia** | Kochia |
| *Salsola tragus** | Russian thistle |
| **Cistaceae** | **Rock rose family** |
| *Cistus incanus** | Hairy rockrose |
| **Convolvulaceae** | **Morning-glory family** |
| *Calystegia macrostegia* | Morning-glory |
| **Crassulaceae** | **Stonecrop family** |
| *Dudleya edulis* | Fingertips |
| *Dudleya lanceolata* | Lanceleaf dudleya |
| *Dudleya pulverulenta* | Chalky live-forever |
| **Cucurbitaceae** | **Gourd family** |
| *Cucurbita foetidissima* | Calabazilla |
| *Marah macrocarpus* | Cucamonga manroot |
| **Euphorbiaceae** | **Spurge family** |
| *Euphorbia peplus** | Petty spurge |
| *Ricinus communis** | Castor bean |
| **Fabaceae** | **Pea family** |
| *Lotus purshianus* | Spanish clover |
| *Lotus scoparius* | Deerweed |
| *Lupinus succulentus* | Arroyo lupine |
| *Medicago polymorpha** | Bur-clover |
| *Melilotus indicus** | Annual yellow sweetclover |
| *Vicia sativa** | Common vetch |
| **Fagaceae** | **Beech family** |
| *Quercus agrifolia* | Coastal live oak |
| *Quercus berberidifolia* | Scrub oak |
| **Geraniaceae** | **Geranium family** |
| *Erodium brachycarpum** | Shortfruit stork's bill |
| *Erodium cicutarium** | Redstem stork's bill |
| *Erodium moschatum** | Musky stork's bill |
| **Hydrophyllaceae** | **Waterleaf family** |
| *Pholistoma auritum* | Blue fiesta flower |

**Table B. Plant Species Observed During Focused Surveys**

| Scientific Name | Common Name |
|---|---|
| **Lamiaceae** | **Mint family** |
| *Salvia apiana* | White sage |
| *Salvia mellifera* | Black sage |
| **Malvaceae** | **Mallow family** |
| *Malva parviflora** | Cheeseweed mallow |
| *Sidalcea malviflora* | Checker bloom |
| **Myrtaceae** | **Myrtle family** |
| *Eucalyptus* sp.* | Eucalyptus |
| **Onagraceae** | **Evening primrose family** |
| *Clarkia purpurea* | Winecup clarkia |
| *Epilobium brachycarpum* | Panicled willow-herb |
| **Plantaginaceae** | **Plantain family** |
| *Plantago coronopus** | Cut-leaf plantain |
| *Plantago lanceolata** | English plantain |
| **Platanaceae** | **Sycamore family** |
| *Platanus racemosa* | Western sycamore |
| **Polygonaceae** | **Buckwheat family** |
| *Eriogonum fasciculatum* | California buckwheat |
| **Primulaceace** | **Primrose family** |
| *Anagallis arvensis** | Scarlet pimpernel |
| **Ranunculaceae** | **Buttercup family** |
| *Clematis* sp. | Clematis |
| **Rhamnaceae** | **Buckthorn family** |
| *Rhamnus ilicifolia* | Hollyleaf redberry |
| **Rosaceae** | **Rose family** |
| *Heteromeles arbutifolia* | Toyon |
| **Rubiaceae** | **Madder family** |
| *Galium angustifolium* ssp. *angustifolium* | Narrow-leaved bedstraw |
| *Galium aparine* | Goose grass |
| **Salicaceae** | **Willow family** |
| *Salix gooddingii* | Goodding's willow |
| *Salix laevigata* | Red willow |
| *Salix lasiolepis* | Arroyo willow |
| **Scrophulariaceae** | **Figwort family** |
| *Castilleja exserta* | Purple owl's clover |
| *Keckiella cordifolia* | Red bush penstemon |
| *Mimulus aurantiacus* | Red bush monkey-flower |

**Table B. Plant Species Observed During Focused Surveys**

| Scientific Name | Common Name |
|---|---|
| **Solanaceae** | **Nightshade family** |
| *Nicotiana glauca** | Tree tobacco |
| *Solanum americanum* | American black nightshade |
| **Vitaceae** | **Grape family** |
| *Vitis girdiana* | Desert wild grape |
| **Zygophyllaceace** | **Caltrop family** |
| *Tribulus terrestris** | Puncture vine |
| **MAGNOLIOPHYTA: LILIOPSIDA** | **MONOCOT FLOWERING PLANTS** |
| **Juncaceae** | **Rush family** |
| *Juncus bufonius* | Toad rush |
| **Liliaceae** | **Lily family** |
| *Bloomeria crocea* | Golden stars |
| *Calochortus splendens* | Splendid mariposa lily |
| **Poaceae** | **Grass family** |
| *Agrostis viridis** | Water bentgrass |
| *Avena barbata** | Slender wild oat |
| *Avena fatua** | Wild oat |
| *Brachypodium distachyon** | Purple false brome |
| *Bromus diandrus** | Ripgut brome |
| *Bromus hordeaceus** | Soft chess |
| *Bromus madritensis** | Foxtail chess |
| *Cynodon dactylon** | Bermuda grass |
| *Gastridium ventricosum** | Nitgrass |
| *Hordeum murinum** | Mouse barley |
| *Leymus condensatus* | Giant wildrye |
| *Lolium multiflorum** | Italian ryegrass |
| *Melica imperfecta* | Coast range melic |
| *Nassella pulchra* | Purple needlegrass |
| *Phalaris minor** | Littleseed canary grass |
| *Piptatherum miliaceum** | Smilo grass |
| *Poa annua** | Annual bluegrass |
| *Polypogon monspeliensis** | Annual rabbitsfoot grass |
| *Vulpia myuros** | Rat-tail fescue |

*** Nonnative species**

# Appendix C Vascular Plant Species Observed

| Scientific Name | Common Name |
|---|---|
| **POLYPODIOPHYTA** | **TRUE FERNS** |
| **Pteridaceae** | **Lip fern family** |
| *Pellaea andromedifolia* | Coffee fern |
| **MAGNOLIOPHYTA: MAGNOLIOPSIDA** | **DICOT FLOWERING PLANTS** |
| **Amaranthaceae** | **Amaranth family** |
| *Amaranthus albus** | Tumbling pigweed |
| *Amaranthus* sp. | Pigweed |
| **Anacardiaceae** | **Sumac family** |
| *Malosma laurina* | Laurel sumac |
| *Rhus integrifolia* | Lemonade berry |
| *Schinus molle** | Peruvian pepper tree |
| *Toxicodendron diversilobum* | Poison oak |
| **Apiaceae** | **Carrot family** |
| *Conium maculatum** | Poison hemlock |
| *Daucus pusillus* | American wild carrot |
| *Foeniculum vulgare** | Fennel |
| *Sanicula crassicaulis* | Pacific blacksnakeroot |
| **Asclepiadaceae** | **Milkweed family** |
| *Asclepias eriocarpa* | Indian milkweed |
| *Asclepias fascicularis* | Narrow-leaved milkweed |
| **Asteraceae** | **Sunflower family** |
| *Achillea millefolium* | Common yarrow |
| *Acourtia microcephala* | Sacapellote |
| *Ambrosia psilostachya* | Western ragweed |
| *Artemisia californica* | California sagebrush |
| *Artemisia douglasiana* | Mugwort |
| *Baccharis pilularis* | Coyote brush |
| *Baccharis salicifolia* | Mule fat |
| *Brickellia californica* | California brickellbush |
| *Carduus pycnocephalus** | Italian Thistle |
| *Centaurea melitensis** | Tocalote |
| *Chrysanthemum coronarium** | Garland chrysanthemum |

| Scientific Name | Common Name |
|---|---|
| *Conyza canadensis* | Canadian horseweed |
| *Corethrogyne filaginifolia* | California aster |
| *Cynara cardunculus** | Artichoke thistle |
| *Deinandra fasciculata* | Fascicled tarweed |
| *Erigeron foliosus* | Leafy daisy |
| *Hedypnois cretica** | Crete weed |
| *Heterotheca grandiflora* | Telegraph weed |
| *Isocoma menziesii* | Goldenbush |
| *Lactuca serriola** | Prickly lettuce |
| *Malacothrix saxatilis* | Cliff malacothrix |
| *Matricaria discoidea** | Disc mayweed |
| *Osmadenia tenella* | False rosinweed |
| *Picris echioides** | Bristly ox-tongue |
| *Pseudognaphalium californicum* | California rabbit-tobacco |
| *Pseudognaphalium luteoalbum** | Jersey cudweed |
| *Silybum marianum** | Milk thistle |
| *Sonchus asper** | Prickly sow thistle |
| *Sonchus oleraceus** | Common sow thistle |
| *Xanthium spinosum* | Spiny clotbur |
| *Xanthium strumarium* | Rough cockleburr |
| **Brassicaceae** | **Mustard family** |
| *Brassica nigra** | Black mustard |
| *Hirschfeldia incana** | Shortpod mustard |
| *Lepidium didymum** | Lesser wart-cress |
| *Nasturtium officinale* | Watercress |
| *Raphanus sativus** | Wild radish |
| *Sisymbrium irio** | London rocket |
| *Sisymbrium orientale** | Indian hedgemustard |
| **Cactaceae** | **Cactus family** |
| *Opuntia* cf. *oricola* | Chaparral pricklypear |
| *Opuntia littoralis* | Coastal prickleypear |
| **Caprifoliaceae** | **Honeysuckle family** |
| *Lonicera subspicata* | Honeysuckle |
| *Sambucus nigra* ssp. *cerulean* | Blue elderberry |
| **Caryophyllaceae** | **Pink family** |
| *Silene gallica** | Common catchfly |
| **Chenopodiaceae** | **Saltbush family** |
| *Atriplex suberecta** | Peregrine saltbush |
| *Bassia hyssopifolia** | Five-hook bassia |

| Scientific Name | Common Name |
|---|---|
| *Chenopodium murale** | Nettleleaf goosefoot |
| *Kochia scoparia** | Kochia |
| *Salsola tragus** | Russian thistle |
| **Cistaceae** | **Rock rose family** |
| *Cistus incanus** | Hairy rockrose |
| **Convolvulaceae** | **Morning-glory family** |
| *Calystegia macrostegia* | Morning-glory |
| **Crassulaceae** | **Stonecrop family** |
| *Dudleya edulis* | Fingertips |
| *Dudleya lanceolata* | Lanceleaf dudleya |
| *Dudleya pulverulenta* | Chalky live-forever |
| **Cucurbitaceae** | **Gourd family** |
| *Cucurbita foetidissima* | Calabazilla |
| *Marah macrocarpus* | Cucamonga manroot |
| **Euphorbiaceae** | **Spurge family** |
| *Euphorbia peplus** | Petty spurge |
| *Ricinus communis** | Castor bean |
| **Fabaceae** | **Pea family** |
| *Lotus purshianus* | Spanish clover |
| *Lotus scoparius* | Deerweed |
| *Lupinus succulentus* | Arroyo lupine |
| *Medicago polymorpha** | Bur-clover |
| *Melilotus indicus** | Annual yellow sweetclover |
| *Vicia sativa** | Common vetch |
| **Fagaceae** | **Beech family** |
| *Quercus agrifolia* | Coastal live oak |
| *Quercus berberidifolia* | Scrub oak |
| **Geraniaceae** | **Geranium family** |
| *Erodium brachycarpum** | Shortfruit stork’s bill |
| *Erodium cicutarium** | Redstem stork’s bill |
| *Erodium moschatum** | Musky stork’s bill |
| **Hydrophyllaceae** | **Waterleaf family** |
| *Pholistoma auritum* | Blue fiesta flower |

| Scientific Name | Common Name |
|---|---|
| **Lamiaceae** | **Mint family** |
| *Salvia apiana* | White sage |
| *Salvia mellifera* | Black sage |
| **Malvaceae** | **Mallow family** |
| *Malva parviflora** | Cheeseweed mallow |
| *Sidalcea malviflora* | Checker bloom |
| **Myrtaceae** | **Myrtle family** |
| *Eucalyptus* sp.* | Eucalyptus |
| **Onagraceae** | **Evening primrose family** |
| *Clarkia purpurea* | Winecup clarkia |
| *Epilobium brachycarpum* | Panicled willow-herb |
| **Plantaginaceae** | **Plantain family** |
| *Plantago coronopus** | Cut-leaf plantain |
| *Plantago lanceolata** | English plantain |
| **Platanaceae** | **Sycamore family** |
| *Platanus racemosa* | Western sycamore |
| **Polygonaceae** | **Buckwheat family** |
| *Eriogonum fasciculatum* | California buckwheat |
| **Primulaceace** | **Primrose family** |
| *Anagallis arvensis** | Scarlet pimpernel |
| **Ranunculaceae** | **Buttercup family** |
| *Clematis* sp. | Clematis |
| **Rhamnaceae** | **Buckthorn family** |
| *Rhamnus ilicifolia* | Hollyleaf redberry |
| **Rosaceae** | **Rose family** |
| *Heteromeles arbutifolia* | Toyon |
| **Rubiaceae** | **Madder family** |
| *Galium angustifolium* ssp. *angustifolium* | Narrow-leaved bedstraw |
| *Galium aparine* | Goose grass |

| Scientific Name | Common Name |
|---|---|
| **Salicaceae** | **Willow family** |
| *Salix gooddingii* | Goodding's willow |
| *Salix laevigata* | Red willow |
| *Salix lasiolepis* | Arroyo willow |
| **Scrophulariaceae** | **Figwort family** |
| *Castilleja exserta* | Purple owl's clover |
| *Keckiella cordifolia* | Red bush penstemon |
| *Mimulus aurantiacus* | Red bush monkey-flower |
| **Solanaceae** | **Nightshade family** |
| *Nicotiana glauca** | Tree tobacco |
| *Solanum americanum* | American black nightshade |
| **Vitaceae** | **Grape family** |
| *Vitis girdiana* | Desert wild grape |
| **Zygophyllaceace** | **Caltrop family** |
| *Tribulus terrestris** | Puncture vine |
| **MAGNOLIOPHYTA: LILIOPSIDA** | **MONOCOT FLOWERING PLANTS** |
| **Juncaceae** | **Rush family** |
| *Juncus bufonius* | Toad rush |
| **Liliaceae** | **Lily family** |
| *Bloomeria crocea* | Golden stars |
| *Calochortus splendens* | Splendid mariposa lily |
| **Poaceae** | **Grass family** |
| *Agrostis viridis** | Water bentgrass |
| *Avena barbata** | Slender wild oat |
| *Avena fatua** | Wild oat |
| *Brachypodium distachyon** | Purple false brome |
| *Bromus diandrus** | Ripgut brome |
| *Bromus hordeaceus** | Soft chess |
| *Bromus madritensis** | Foxtail chess |
| *Cynodon dactylon** | Bermuda grass |
| *Gastridium ventricosum** | Nitgrass |
| *Hordeum murinum** | Mouse barley |
| *Leymus condensatus* | Giant wildrye |
| *Lolium multiflorum** | Italian ryegrass |
| *Melica imperfecta* | Coast range melic |
| *Nassella pulchra* | Purple needlegrass |

| Scientific Name | Common Name |
|---|---|
| *Phalaris minor** | Littleseed canary grass |
| *Piptatherum miliaceum** | Smilo grass |
| *Poa annua** | Annual bluegrass |
| *Polypogon monspeliensis** | Annual rabbitsfoot grass |
| *Vulpia myuros** | Rat-tail fescue |

* Nonnative species

# Appendix D Wildlife Species Detected

This is a list of the conspicuous amphibians, reptiles, birds, and mammals noted in the study area by LSA biologists in 2011. Presence may be noted if a species is seen or heard, or identified by the presence of tracks, scat, or other signs.

* Species not native to the study area

| Scientific Name | Common Name |
|---|---|
| **AMPHIBIA** | **AMPHIBIANS** |
| **Bufonidae** | **True Toads** |
| *Anaxyrus californicus* | Arroyo toad |
| **Hylidae** | **Treefrogs and Relatives** |
| *Pseudacris hypochondriaca* | Baja California treefrog |
| **Ranidae** | **True Frogs** |
| *Lithobates catesbeianus** | American bullfrog |
| **REPTILIA** | **REPTILES** |
| **Phrynosomatidae** | **Phrynosomatid Lizards** |
| *Sceloporus occidentalis* | Western fence lizard |
| **AVES** | **BIRDS** |
| **Odontophoridae** | **New World Quail** |
| *Callipepla californica* | California quail |
| **Cathartidae** | **New World Vultures** |
| *Cathartes aura* | Turkey vulture |
| **Accipitridae** | **Hawks, Kites, Eagles, and Allies** |
| *Accipiter cooperii* | Cooper's hawk |
| *Buteo lineatus* | Red-shouldered hawk |
| *Buteo jamaicensis* | Red-tailed hawk |
| **Charadriidae** | **Plovers and Lapwings** |
| *Charadrius vociferus* | Killdeer |
| **Columbidae** | **Pigeons and Doves** |
| *Patagioenas fasciata* | Band-tailed pigeon |
| *Zenaida macroura* | Mourning dove |

| Scientific Name | Common Name |
|---|---|
| **Tytonidae** | **Barn Owls** |
| *Tyto alba* | Barn owl |
| **Strigidae** | **Typical Owls** |
| *Bubo virginianus* | Great horned owl |
| **Apodidae** | **Swifts** |
| *Aeronautes saxatilis* | White-throated swift |
| **Trochilidae** | **Hummingbirds** |
| *Calypte anna* | Anna's hummingbird |
| **Picidae** | **Woodpeckers and Allies** |
| *Picoides nuttallii* | Nuttall's woodpecker |
| *Colaptes auratus* | Northern flicker |
| **Tyrannidae** | **Tyrant Flycatchers** |
| *Empidonax difficilis* | Pacific-slope flycatcher |
| *Sayornis nigricans* | Black phoebe |
| *Myiarchus cinerascens* | Ash-throated flycatcher |
| *Tyrannus vociferans* | Cassin's kingbird |
| **Corvidae** | **Crows and Jays** |
| *Aphelocoma californica* | Western scrub-jay |
| *Corvus brachyrhynchos* | American crow |
| *Corvus corax* | Common raven |
| **Hirundinidae** | **Swallows** |
| *Stelgidopteryx serripennis* | Northern rough-winged swallow |
| *Petrochelidon pyrrhonota* | Cliff swallow |
| **Paridae** | **Chickadees and Titmice** |
| *Baeolophus inoratus* | Oak titmouse |
| **Aegithalidae** | **Long-Tailed Tits and Bushtits** |
| *Psaltriparus minimus* | Bushtit |
| **Troglodytidae** | **Wrens** |
| *Thryomanes bewickii* | Bewick's wren |
| *Troglodytes aedon* | House wren |
| **Sylviidae** | **Sylviid Warblers** |
| *Chamaea fasciata* | Wrentit |

| Scientific Name | Common Name |
|---|---|
| **Sturnidae** | **Starlings** |
| *Sturnus vulgaris** | European starling |
| **Ptilogonatidae** | **Silky-flycatchers** |
| *Phainopepla nitens* | Phainopepla |
| **Parulidae** | **Wood Warblers** |
| *Oreothlypis celata* | Orange-crowned warbler |
| *Geothlypis trichas* | Common yellowthroat |
| **Emberizidae** | **Emberizids** |
| *Pipilo maculatus* | Spotted towhee |
| *Melozone crissalis* | California towhee |
| **Icteridae** | **Blackbirds** |
| *Agelaius phoeniceus* | Red-winged blackbird |
| *Icterus bullockii* | Bullock's oriole |
| **Fringillidae** | **Fringilline and Cardueline Finches and Allies** |
| *Carpodacus mexicanus* | House finch |
| *Spinus psaltria* | Lesser goldfinch |
| **MAMMALIA** | **MAMMALS** |
| **Sciuridae** | **Squirrels, Chipmunks, and Marmots** |
| *Spermophilus beecheyi* | California ground squirrel |
| **Geomyidae** | **Pocket Gophers** |
| *Thomomys bottae* | Botta's pocket gopher |
| **Molossidae** | **Free-Tailed Bats** |
| *Eumops perotis* | Western mastiff bat |
| *Tadarida brasiliensis* | Mexican free-tailed bat |
| **Verspertilionidae** | **Evening Bats** |
| *Eptesicus fuscus* | Big brown bat |
| *Lasiurus cinereus* | Hoary bat |
| *Parastrellus hesperus* | Western canyon bat[1] |
| *Myotis californicus* | California myotis |
| *Myotis ciliolabrum* | Western small-footed myotis |
| *Myotis yumanensis* | Yuma myotis |

[1] Formerly western pipistrelle (*Pipistrellus hesperus*).

Taxonomy and nomenclature are based on the following:

- **Amphibians and Reptiles:** Crother, B.I. ed. (2008, Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico. *Herpetological Circular* 37) for species taxonomy and nomenclature; Stebbins, R.C. (2003, A Field Guide to Western Reptiles and Amphibians, third edition, Houghton Mifflin, Boston) for sequence and higher order taxonomy.
- **Birds:** American Ornithologists' Union (1998, The A.O.U. Checklist of North American Birds, Seventh Edition, American Ornithologists' Union, Washington D.C.; and supplements; see http://www.aou.org//north/index.php).
- **Mammals:** Wilson, D.E., and D.M. Reeder, eds. (2005, Mammal Species of the World, 3rd ed., Johns Hopkins University Press, Baltimore, Maryland; see http://vertebrates.si.edu/mammals/msw/).

# Appendix E Non-Protocol Arroyo Toad Survey Report

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35TH ANNIVERSARY 1976 LSA 2011

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POINT RICHMOND
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO
SOUTH SAN FRANCISCO

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1812 Ninth Street
Sacramento, California 95811

Subject: Non-Protocol Arroyo Toad Surveys along Ortega Highway (SR-74) from Post Mile (PM) 2.93 to PM 5.06, San Juan Creek, Orange County, California; Caltrans Project No. 12A1304, TO 5A, EA No. 0L7201

Dear Ms. McCarthy and Ms. Comrack:

This letter report documents results of six non-protocol (i.e., auditory only) surveys for the State and federally listed endangered arroyo toad (*Anaxyrus californicus*; ARTO) in San Juan Creek for pavement improvement work to be conducted along State Route 74 (SR-74; Ortega Highway) from Post Mile (PM) 2.93 to PM 5.06. The survey area is located in San Juan Creek just north of SR-74 within Rancho Mission Viejo (a private ranch) in Orange County, California (Figure 1; all figures in Appendix A).

Auditory surveys were conducted from the California Department of Transportation (Caltrans) right-of-way (ROW) along SR-74 without direct access to San Juan Creek. A minimum total of five male arroyo toads were detected in San Juan Creek.

## Biological Study Area

The Biological Study Area (BSA) is north of the proposed project alignment and includes San Juan Creek, which flows from east to west in the southern part of Orange County, California (Figure 1). Auditory surveys were conducted while standing on the side of SR-74. This survey location began approximately 2,000 feet (ft) (0.40 mile) east of the Antonio Parkway/La Pata intersection, continued east for 2.13 miles, and terminated at Cristianitos Road. The BSA covers approximately 2.8 linear miles of San Juan Creek, which is bordered by upland benches with ruderal vegetation and patches of oak woodland, chaparral, sage scrub, and willow riparian habitats (Figures 2 and 3). This BSA is within Rancho Mission Viejo (a private ranch), with the City of San Juan Capistrano to the west and Ronald W. Caspers Wilderness Park a few miles to the east.

Specifically, the survey area is on the United States Geological Survey (USGS) *Cañada Gobernadora*, *California* 7.5-minute quadrangle map in Sections 33, 34, and 35, Township 7S, Range 7W with the central point of the survey area at approximately 33°31'18.50" N latitude and 117°35'53.26" W longitude (Universal Transverse Mercator [UTM] Zone 11 North American Datum 83 [NAD83] 444,463 by 3,709,281).

The BSA portion of San Juan Creek is relatively devoid of vegetation, with a loose, sandy substrate and cobbles. Within the BSA, San Juan Creek flows gradually west from approximately 290 ft above mean sea level (amsl) at the east end of the BSA to approximately 190 ft amsl at the west end of the BSA. All portions of the survey area visible from the roadside appear to consist of habitat suitable for breeding

arroyo toad given the contiguous upland habitat, suitable sandy substrate, and the gently flowing creek. Shallow, slowly flowing water was present in San Juan Creek during all six surveys (Figure 3).

## Methods

Per the survey protocol, the maximum recommended survey number is six, including at least one survey in the months of April, May, and June, and with both daytime and nighttime survey components conducted within the same 24-hour period. A total of six ARTO auditory surveys were conducted between April 27 and June 29, 2011, but did not follow protocol techniques since San Juan Creek was not visually surveyed for egg masses, tadpoles, or (female) adult toads. The BSA is on private land, so the surveys were conducted at nighttime from the Caltrans SR-74 ROW, when male ARTO vocalize and can be detected from a distance. Despite the limitations of the roadside survey, calling male ARTO were heard in most sections of San Juan Creek.

During each nighttime survey, two LSA Associates, Inc. (LSA) biologists drove to pullout locations and then walked slowly along the SR-74 ROW. Each biologist listened for several minutes for calling male ARTO. Toad detection locations were mapped using a global positioning system (GPS) and on the field maps (an aerial photo at 1 inch = 300 ft). In addition, the general locations of calling male American bullfrog (*Lithobates catesbeiana*), a nonnative species, were also mapped.

## Results

San Juan Creek and the vicinity are known to have arroyo toad populations. A California Natural Diversity Database (CNDDB) record reported arroyo toad in 1985, 1995, and 2001 within a 3 mile section of San Juan Creek both east and west of Cañada Gobernadora, which covers most of the BSA (CNDDB 2011).

In 2011, the BSA habitat conditions were favorable for breeding arroyo toad. The first three auditory surveys were positive for calling male arroyo toad, but the last three surveys were negative (Table A). Overall, San Juan Creek provides high quality foraging and breeding habitat for many of the locally occurring amphibian species including arroyo toad.

### Table A: Survey Conditions and Results

| 2011 Date | Time | Weather Conditions | Arroyo Toads Detected? | Surveyors |
|---|---|---|---|---|
| April 27 | 2130–2345 | Clear skies (0% cover), 61–56°F, 0–2 mph winds | Yes<br>3 calling males | IQ, MT |
| May 4 | 2315–0015 | Clear skies (0% cover), 57°F, 0–1 mph winds | Yes<br>4 calling males | IQ, MT |
| May 11 | 2315–0035 | Clear skies (0% cover), 56–51°F, 0 mph winds | Yes<br>5 calling males | IQ, MT |
| June 9 | 2115–2315 | Overcast (100% cover), 63°F, 0–2 mph winds, 72% humidity | No | IQ, SL |
| June 15 | 2100–2400 | Overcast (80% cover), 64–58°F, 0–3 mph winds, 84% humidity | No | MT, SL |
| June 29 | 2100–0100 | Clear skies (0% cover), 66–61°F, 2–4 mph winds, 67% humidity | No | MT, SL |

Surveyors: IQ = Ingri Quon; MT = Matt Teutimez; SL = Sara Louwsma
°F = degrees Fahrenheit
mph = miles per hour

During most surveys, Baja California treefrog (*Pseudacris hypochondriaca*) were detected aurally in San Juan Creek. In addition, a minimum of five American bullfrog (*Lithobates catesbeianus*) were heard in the western half of the survey area. This nonnative species is highly invasive and is a known predator of arroyo toad and other native species.

Please contact me at (949) 553-0666 if you have any questions about this survey report.

Sincerely,

**LSA ASSOCIATES, INC.**

Ingri Quon
Senior Biologist

cc: Kedest Ketsela, Caltrans District 12

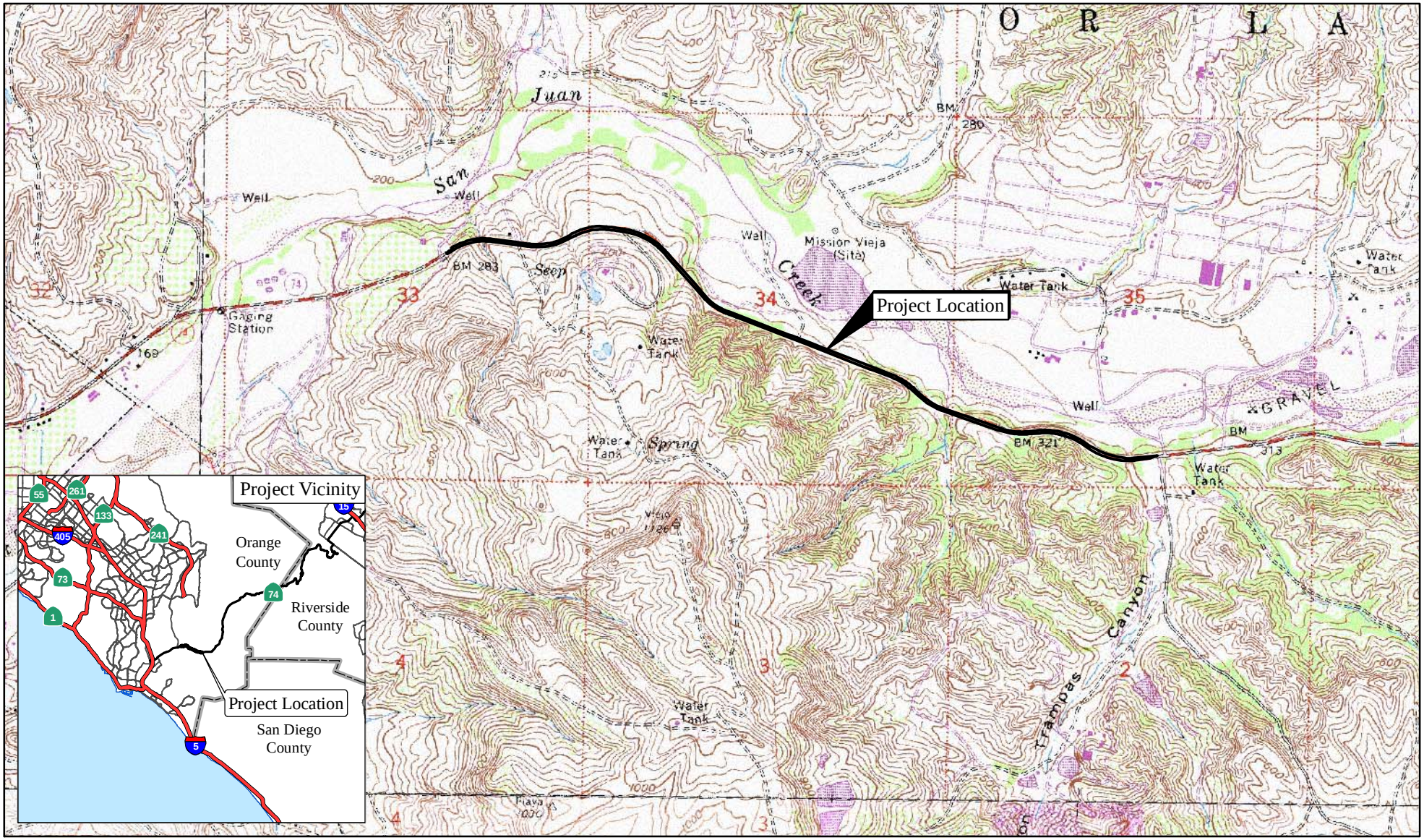
## Reference

California Natural Diversity Database (CNDDB). Literature search conducted July 13, 2011, *Cañada Gobernadora,, California* quadrangle 7.5-minute USGS topographic map.

Attachments: Appendix A: Figures
Appendix B: California Native Species Field Survey Form

# APPENDIX A

# FIGURES




LSA

LEGEND

Project Location

FIGURE 1

N

0 1000 2000

FEET

SOURCE: USGS 7.5' QUAD - CANADA GOBERNADORA ('88)

I:\CDT1103\GIS\ProjLoc.mxd (9/2/2011)

*SR-74 (Ortega Highway) Pavement Rehabilitation Project*

Project Location Map

EA 0L7201

PM 2.93 to 5.06


LEGEND

- Project Area
- American Bullfrog: Calling Male(s)
- Arroyo Toad Location: Calling Male(s)

N

0 200 400
FEET

SOURCE: Bing (c. 2008)

I:\CDT1103\GIS\ARTO.mxd (9/2/2011)

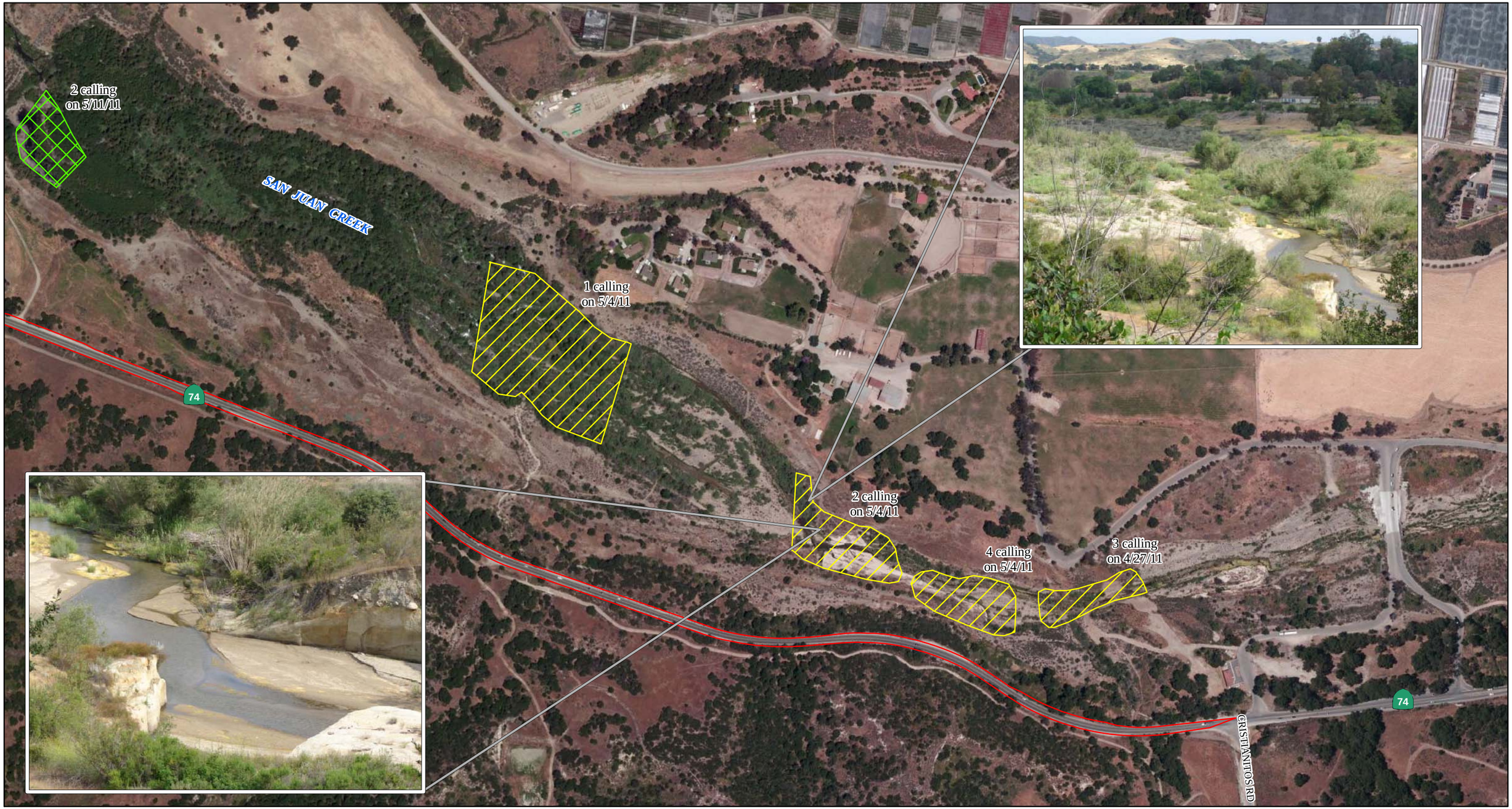
FIGURE 2
Sheet 1 of 2

*SR-74 (Ortega Highway) Pavement Rehabilitation Project*

2011 Arroyo Toad Survey Results

EA 0L7201

PM 2.93 to 5.06




LEGEND

- Project Area
- American Bullfrog: Calling Male(s)
- Arroyo Toad Location: Calling Male(s)

N

0 200 400
FEET

SOURCE: Bing (c. 2008)

I:\CDT1103\GIS\ARTO.mxd (9/2/2011)

FIGURE 2
Sheet 2 of 2

*SR-74 (Ortega Highway) Pavement Rehabilitation Project*

2011 Arroyo Toad Survey Results

EA 0L7201
PM 2.93 to 5.06

# APPENDIX B

# CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

Mail to:
*California Natural Diversity Database*
*Department of Fish and Game*
*1807 13th Street, Suite 202*
*Sacramento, CA 95811*
*Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov*

**Date of Field Work (mm/dd/yyyy):** 05/11/2011

*For Office Use Only*
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Reset

# California Native Species Field Survey Form

Send Form

**Scientific Name:** *Anaxyrus californicus*

**Common Name:** arroyo toad

**Species Found?** ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 5 Subsequent Visit? ☑ yes ☐ no

**Is this an existing NDDB occurrence?** 0 Yes, Occ. # ☐ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

**Reporter:** Ingri Quon, LSA Associates, Inc.
**Address:** 20 Executive Park, Suite 200
Irvine, CA 92614
**E-mail Address:** ingri.quon@lsa-assoc.com
**Phone:** (949) 553-0666

***Plant Information***

Phenology: _____% vegetative _____% flowering _____% fruiting

***Animal Information***

5 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☑ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

***Location Description* (please attach map AND/OR fill out your choice of coordinates, below)**

Approximately 2 miles of San Juan Creek from 2,000 ft east of the Antonio Pkwy/La Pata intersection with Ortega Hwy (SR-74) east to Cristianitos Road at SR-74.

County: Orange Landowner / Mgr.: Rancho Mission Viejo

Quad Name: Canada Gobernadora Elevation: 250 ft

T 7S R 7W Sec 33, ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): GoogleEarth

T 7S R 7W Sec 34, ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model n/a

**DATUM:** **NAD27** ☐ **NAD83** ☐ **WGS84** ☐ Horizontal Accuracy 10 ft meters/feet

**Coordinate System:** UTM Zone 10 ☐ UTM Zone 11 ☑ ***OR*** Geographic (Latitude & Longitude) ☐

**Coordinates:** 444,463 by 3,709,281
Lat/Long 33 31'18.50" by 117 35'53.26"

***Habitat Description (plants & animals)*** *plant communities, dominants, associates, substrates/soils, aspects/slope:*
***Animal Behavior*** *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Excellent willow riparian habitat edging San Juan Creek. Excellent for arroyo toad breeding. Wide, shallow, lightly flowing water over sandy substrate throughout the survey period. Full sun exposure.

Calling males in late April and early May throughout the length of the 2 mile survey area. Maximum of 5 calling males on May 11. Breeding not confirmed, but likely.

Please fill out separate form for other rare taxa seen at this site. N/A

***Site Information*** Overall site/occurrence quality/viability (site + population): ☑ Excellent ☐ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Open space, private ranch with some houses/corral/mine.

Visible disturbances: Nonnatives: American bullfrogs (5+), Arundo donax.

Threats: Nonnative plants and animals (bullfrog in creek, crayfish).

Comments: Six auditory survey only from Caltrans ROW along Ortega Hwy. Direct access to San Juan Creek was not granted. Nighttime surveys: April 26, May 4, 11, June 9, 15, and 29, 2011. Only the first 3 surveys had calling males = 3, 4, 5 males, respectively. Several positive NDDB forms exist for this area in recent years.

***Determination:*** *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Assisted by Matt Teutimez and Sara Louwsma (LSA).
☐ Other: _____

***Photographs:*** *(check one or more)*

| | Slide | Print | Digital |
|---|---|---|---|
| Plant / animal | ☐ | ☐ | ☐ |
| Habitat | ☐ | ☐ | ☑ |
| Diagnostic feature | ☐ | ☐ | ☐ |

May we obtain duplicates at our expense? yes ☑ no ☐

# Appendix F Protocol Least Bell's Vireo Survey Report

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35TH ANNIVERSARY 1976 LSA 2011

LSA ASSOCIATES, INC.
20 EXECUTIVE PARK, SUITE 200
IRVINE, CALIFORNIA 92614
949.553.0666 TEL
949.553.8076 FAX

BERKELEY
CARLSBAD
FORT COLLINS
FRESNO
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO
SOUTH SAN FRANCISCO

August 24, 2011

Erin McCarthy
United States Fish and Wildlife Service
Carlsbad Field Office
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

Lyann Comrack
Nongame Wildlife Program
California Department of Fish and Game
1812 Ninth Street
Sacramento, California 95811

Subject: Protocol Least Bell's Vireo Surveys along Ortega Highway (SR-74) from Post Mile (PM) 2.93 to PM 5.06, San Juan Creek, Orange County, California; Caltrans Project No. 12A1304, TO 5A, EA No. 0J4301

Dear Ms. McCarthy and Ms. Comrack:

This letter report documents results of eight protocol surveys for the State and federally listed endangered least Bell's vireo (*Vireo bellii pusillus*; LBVI) in preparation for pavement improvement work to be conducted along State Route 74 (SR-74; Ortega Highway) from Post Mile (PM) 2.93 to PM 5.06. The survey area included willow riparian habitat associated with San Juan Creek and its tributaries along SR-74 within Rancho Mission Viejo (a private ranch) in Orange County, California (Figure 1; all figures in Appendix A).

No LBVI were detected during surveys conducted from the California Department of Transportation (Caltrans) right-of-way (ROW) along SR-74.

## Biological Study Area

To determine the Biological Study Area (BSA) for the LBVI survey, a habitat assessment was conducted on May 19, 2011, along the entire project area. The project area begins approximately 2,000 feet (ft) (0.40 mile) east of the Antonio Parkway/La Pata intersection, continues east along SR-74 for 2.13 miles, and terminates at Cristianitos Road. This area is surrounded by upland benches associated with San Juan Creek and rolling hillsides vegetated with ruderal plant species and patches of oak woodland, chaparral, sage scrub, and willow riparian habitats in Rancho Mission Viejo, a private ranch. Lands west of the project area are part of the City of San Juan Capistrano, and a few miles to the east, is the 8,000 acre Ronald W. Caspers Wilderness Park (Figures 1 and 2).

The habitat assessment determined one tributary to San Juan Creek has suitable habitat for LBVI. The BSA for this survey is at the northeast end of the proposed project alignment and includes willow riparian habitat (Figure 2). Surveys were conducted while standing in the SR-74 ROW due to limited access. Specifically, the BSA is on the United States Geological Survey (USGS) *Cañada Gobernadora*, *California* 7.5-minute quadrangle map in Section 35, Township 7S, Range 7W, with the survey area at approximately 33°30'50" N latitude and 117°34'55" W longitude (Universal Transverse Mercator [UTM] Zone 11 North American Datum 83 [NAD83] 445,954 by 3,708,411).

The narrow BSA, vegetated with willow species (*Salix* spp.), some of which appear to be dead or dying since they were lacking leaves during the springtime surveys, is surrounded by California sagebrush

(*Artemisia californica*), mulefat (*Baccharis salicifolia*), and grass species. Soils included a substrate of sandy loam and cobbles. Just north of the BSA, San Juan Creek flows gradually west from approximately 290 ft above mean sea level (amsl) at the east end of the project area to approximately 190 ft amsl at the west end of the project area. All portions of the BSA visible from the roadside appear to consist of habitat suitable for LBVI given the contiguous willow riparian habitat. During all surveys, slowly flowing water was present in San Juan Creek, but was lacking within the BSA.

## Methods

LSA biologists Ingri Quon and Matt Teutimez conducted eight protocol LBVI surveys from May 19 to July 28, 2011, in accordance with survey guidelines issued in January 2001 by the United States Fish and Wildlife Service (USFWS). During each survey, the biologist walked slowly along the ROW to visually and aurally survey the riparian habitat for LBVI. Despite the limitations of the roadside survey, the surveyors are confident that if an LBVI territory was within approximately 200 ft of the southern portion of the BSA, it would have been detected aurally.

Surveys were conducted pursuant to Federal Fish and Wildlife Permit TE-777965-9 (April 8, 2008–April 7, 2012) and a letter permit from the California Department of Fish and Game (CDFG) attached to Scientific Collecting Permit SC-000777 covering conditions for research on listed birds (July 23, 2009–April 12, 2012). On May 16, 2011, per permit requirements, a 10-day notification was emailed to Erin McCarthy (USFWS) and Lyann Comrack (CDFG). The survey schedule and conditions are shown in Table A.

## Results

San Juan Creek and the vicinity are known to have LBVI. A California Natural Diversity Database (CNDDB) record search reported LBVI in 2001 and 2003 within a section of San Juan Creek west of Cañada Gobernadora (CNDDB 2011). Cañada Gobernadora is approximately 1 mile northwest of the BSA tributary.

### Table A: Survey Schedule and Conditions

| 2011 Date | Time | Weather Conditions | Surveyor |
|---|---|---|---|
| May 19 | 0845–0945 | Partly cloudy (50% cover), 65°F, 0–3 mph winds | IQ |
| May 29 | 0830–0930 | Partly cloudy (40% cover), 65°F, 0–4 mph winds | IQ |
| June 8 | 0630–0650 | Overcast (100% cover), 60°F, 0–2 mph winds | IQ |
| June 18 | 0900–0930 | Partly cloudy (40% cover), 68°F, 0–5 mph winds | IQ |
| June 28 | 0835–0905 | Overcast (100% cover), 65°F, 0–2 mph winds | IQ |
| July 8 | 0825–0855 | Clear (0% cover), 72°F, 0–1 mph winds | MT |
| July 18 | 0925–0945 | Clear (0% cover), 72°F, 0 mph winds | IQ |
| July 28 | 0830–0930 | Overcast (95% cover), 67°F–72°F, 1–2 mph winds | MT |

Time: Time is reported using a 24-hour clock format.
Surveyor: IQ = Ingri Quon; MT = Matt Teutimez
°F = degrees Fahrenheit
mph = mile per hour

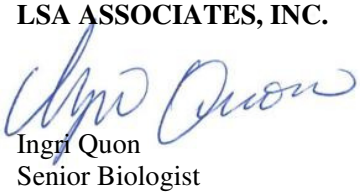
No LBVI were detected or observed within the survey area during the protocol surveys.

No brown-headed cowbirds (*Molothrus ater*; BHCO), a brood parasite of LBVI and other passerines, were detected in the survey area. A list of animal species detected during the surveys is shown in Appendix B.

Please contact me at (949) 553-0666 if you have any questions about this survey report.

Sincerely,

**LSA ASSOCIATES, INC.**



Ingri Quon
Senior Biologist

cc: Gabriela Jauregui, Caltrans District 12

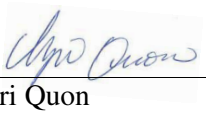
## References

California Department of Fish and Game, Natural Heritage Division, Natural Diversity Database (CNDDB). 2011. RareFind Version 3.1.0. Records search executed August 2011, covering the United States Geological Survey 7.5-minute series USGS topographic map, *Cañada Gobernadora*, *California* quadrangle. Sacramento, California: The Resources Agency. July 2, 2011.

Sibley, David Allen. 2000. *The Sibley Guide to Birds.* First Edition. New York: Alfred A. Knopf.

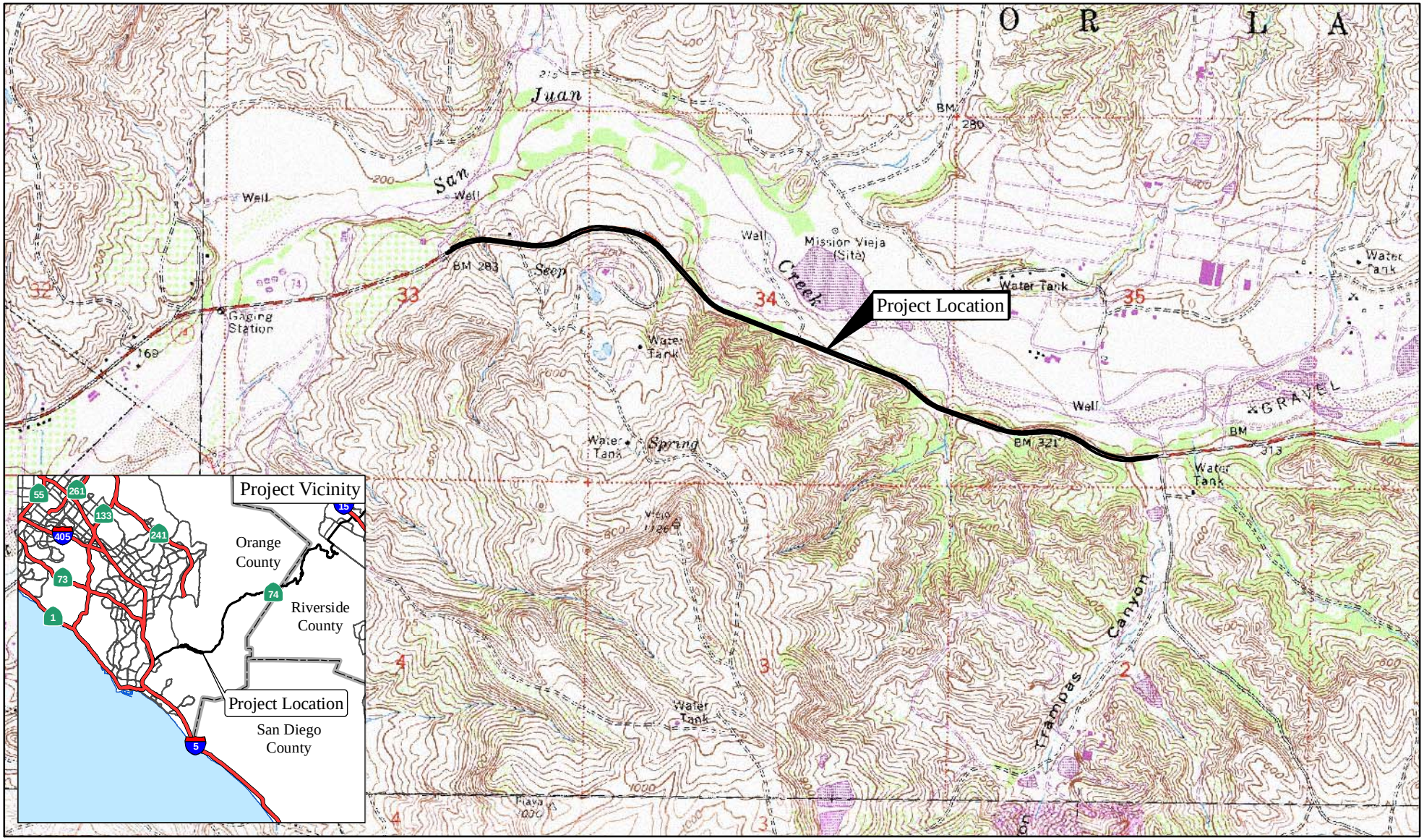
Attachments: Appendix A: Figures
Appendix B: Animal Species Detected

**I CERTIFY THAT THE INFORMATION IN THIS SURVEY REPORT AND ATTACHED EXHIBITS FULLY AND ACCURATELY REPRESENT MY WORK:**

| SURVEYOR: | PERMIT NUMBER: | DATE: |
|---|---|---|
|  Ingri Quon | TE-777965-9 | August 24, 2011 |

# APPENDIX A

# FIGURES




LSA

LEGEND

Project Location

FIGURE 1

0 1000 2000

FEET

SOURCE: USGS 7.5' QUAD - CANADA GOBERNADORA ('88)

I:\CDT1103\GIS\ProjLoc.mxd (8/9/2011)

*SR-74 (Ortega Highway) Pavement Rehabilitation Project*

Project Location Map

EA 0J4301

PM 2.93 to 5.06


LSA

LEGEND

Potentially Suitable Least Bell's Vireo Habitat

Project Area

0 50 100

FEET

SOURCE: Bing (c. 2008)

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FIGURE 2

*SR-74 (Ortega Highway) Pavement Rehabilitation Project*

2011 Least Bell's Vireo Survey Results

EA 0J4301

PM 2.93 to 5.06

# APPENDIX B

# ANIMAL SPECIES DETECTED

# APPENDIX B

# ANIMAL SPECIES DETECTED

This is a list of the conspicuous amphibians, reptiles, birds, and mammals noted in the study area by LSA biologists from May through July 2011. Presence may be noted if a species is seen or heard, or identified by the presence of tracks, scat, or other signs.

* Species not native to the study area

| | |
|---|---|
| **AMPHIBIA** | **AMPHIBIANS** |
| **Hylidae** | **Treefrogs and Relatives** |
| *Pseudacris hypochondriaca* | Baja California treefrog |
| **REPTILIA** | **REPTILES** |
| **Phrynosomatidae** | **Phrynosomatid Lizards** |
| *Sceloporus occidentalis* | Western fence lizard |
| **AVES** | **BIRDS** |
| **Odontophoridae** | **New World Quail** |
| *Callipepla californica* | California quail |
| **Cathartidae** | **New World Vultures** |
| *Cathartes aura* | Turkey vulture |
| **Accipitridae** | **Hawks, Kites, Eagles, and Allies** |
| *Buteo lineatus* | Red-shouldered hawk |
| *Buteo jamaicensis* | Red-tailed hawk |
| **Charadriidae** | **Plovers and Lapwings** |
| *Charadrius vociferus* | Killdeer |
| **Columbidae** | **Pigeons and Doves** |
| *Patagioenas fasciata* | Band-tailed pigeon |
| *Zenaida macroura* | Mourning dove |
| **Apodidae** | **Swifts** |
| *Aeronautes saxatilis* | White-throated swift |

| | |
|---|---|
| **Trochilidae** | **Hummingbirds** |
| *Calypte anna* | Anna's hummingbird |
| **Picidae** | **Woodpeckers and Allies** |
| *Picoides nuttallii* | Nuttall's woodpecker |
| *Colaptes auratus* | Northern flicker |
| **Tyrannidae** | **Tyrant Flycatchers** |
| *Empidonax difficilis* | Pacific-slope flycatcher |
| *Sayornis nigricans* | Black phoebe |
| *Myiarchus cinerascens* | Ash-throated flycatcher |
| *Tyrannus vociferans* | Cassin's kingbird |
| **Corvidae** | **Crows and Jays** |
| *Aphelocoma californica* | Western scrub-jay |
| *Corvus brachyrhynchos* | American crow |
| *Corvus corax* | Common raven |
| **Hirundinidae** | **Swallows** |
| *Stelgidopteryx serripennis* | Northern rough-winged swallow |
| *Petrochelidon pyrrhonota* | Cliff swallow |
| **Paridae** | **Chickadees and Titmice** |
| *Baeolophus inoratus* | Oak titmouse |
| **Aegithalidae** | **Long-Tailed Tits and Bushtits** |
| *Psaltriparus minimus* | Bushtit |
| **Troglodytidae** | **Wrens** |
| *Thryomanes bewickii* | Bewick's wren |
| *Troglodytes aedon* | House wren |
| **Sylviidae** | **Sylviid Warblers** |
| *Chamaea fasciata* | Wrentit |
| **Sturnidae** | **Starlings** |
| * *Sturnus vulgaris* | European starling |
| **Ptilogonatidae** | **Silky-flycatchers** |
| *Phainopepla nitens* | Phainopepla |
| **Parulidae** | **Wood Warblers** |
| *Oreothlypis celata* | Orange-crowned warbler |
| *Geothlypis trichas* | Common yellowthroat |
| **Emberizidae** | **Emberizids** |
| *Pipilo maculatus* | Spotted towhee |
| *Melozone crissalis* | California towhee |

| | |
|---|---|
| **Icteridae** | **Blackbirds** |
| *Agelaius phoeniceus* | Red-winged blackbird |
| *Icterus bullockii* | Bullock's oriole |
| **Fringillidae** | **Fringilline and Cardueline Finches and Allies** |
| *Carpodacus mexicanus* | House finch |
| *Spinus psaltria* | Lesser goldfinch |
| **MAMMALIA** | **MAMMALS** |
| **Geomyidae** | **Pocket Gophers** |
| *Thomomys bottae* | Botta's pocket gopher |

**Taxonomy and nomenclature are based on the following.**

Amphibians and reptiles: Crother, B.I. ed. (2008, Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico. *Herpetological Circular* 37) for species taxonomy and nomenclature; Stebbins, R.C. (2003, A Field Guide to Western Reptiles and Amphibians, third edition, Houghton Mifflin, Boston) for sequence and higher order taxonomy.

Birds: American Ornithologists' Union (1998, The A.O.U. Checklist of North American Birds, Seventh Edition, American Ornithologists' Union, Washington D.C.; and supplements; see http://www.aou.org/checklist/north/index.php).

Mammals: Wilson, D.E., and D.M. Reeder, eds. (2005, Mammal Species of the World, 3rd ed., Johns Hopkins University Press, Baltimore, Maryland; see http://vertebrates.si.edu/mammals/msw/).

# Appendix G Bat Survey Memorandum

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LSA ASSOCIATES, INC.
20 EXECUTIVE PARK, SUITE 200
IRVINE, CALIFORNIA 92614
949.553.0666 TEL
949.553.8076 FAX

BERKELEY
CARLSBAD
FORT COLLINS
FRESNO
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO
SOUTH SAN FRANCISCO

# MEMORANDUM

**DATE:** January 5, 2012

**TO:** Ingri Quon, LSA Senior Biologist

**FROM:** Jill Carpenter, LSA Senior Biologist/Bat Specialist

**SUBJECT:** Bat Habitat Suitability Assessment for the State Route 74 (SR-74) Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road (EA 0L720K; PM 2.93 to 5.06)

The purpose of this memorandum is to discuss the results of the bat habitat suitability assessment performed along State Route 74 (SR-74) for the SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road (Post Mile [PM] 2.93 to 5.06). The project includes widening existing shoulders and replacing existing culverts along a section of SR-74 from Antonio Parkway/La Pata Road to Cristianitos Road in unincorporated Orange County (Figure 1; all figures attached). This section of SR-74 passes through Rancho Mission Viejo, a private ranch comprising rolling hillsides vegetated with ruderal plant species and patches of oak woodland, chaparral, sage scrub, and willow riparian habitats (Figures 2a, 2b, 2c, and 3), with the City of San Juan Capistrano to the west and Ronald W. Caspers Wilderness Park a few miles to the east. The road is in close proximity to and roughly parallels San Juan Creek.

Day roosts are used by bats during the day for shelter from the elements and from predators, while a night roost refers to a structure (natural or humanmade) located near or in the foraging area in which bats roost during the evening between foraging bouts as an energy-saving strategy. Some species roost singly, while other species form colonies of varying sizes. Some species and individuals exhibit a high degree of roost fidelity (i.e., returning to the same roost each night), while others will move among multiple roosts within a given area. Common day roosts utilized by bats include rock crevices, caves, buildings, tree hollows, and crevices beneath tree bark; night roosts may be the same structure as the day roost or another one entirely. Since bats have separate roosting and foraging habitat requirements, it is expected that some bats may utilize one area for foraging and another for roosting. While more significant and direct impacts to bats occur through roost removal, destruction, or disturbance, indirect impacts such as decline of prey base due to loss or modification of foraging habitat can also be substantial. Therefore, when assessing an area with regard to proposed alterations to habitat, a landscape-level approach is required to adequately determine potential impacts to bats.

This assessment was conducted to locate potential bat roosting sites as well as to evaluate the potential for bat foraging and roosting activity within and adjacent to the California Department of Transportation (Caltrans) right-of-way along SR-74. Potential foraging habitat was assessed throughout the project area on the basis of vegetation composition, while potential roosting sites were identified through the examination of large trees, culvert structures, and rocky outcrops for suitable crevices and roosting habitat, as well as for the presence of bat sign (e.g., guano or urine staining). Potential day roosting sites were observed throughout the project area; however, no confirmed day roosting sites for bats were located during the assessment. Night roosting at three culvert structures was confirmed by the presence of guano during the assessment.

## METHODS

This assessment was carried out in two parts. The first consisted of a preliminary daytime habitat assessment conducted along the length of the proposed work on SR-74 in July 2011, while the second component of the assessment consisted of follow-up nighttime surveys conducted in late August and early September 2011. All aspects of the assessment were conducted and/or directly supervised by LSA Associates, Inc. (LSA) Senior Biologist and bat specialist Jill Carpenter.

During the preliminary assessment, potential roosting areas were evaluated by walking along the right-of-way and noting any potentially suitable roosting sites (e.g., mature trees, rock outcrops, and humanmade structures) present within a 100-foot (ft) buffer on either side of the roadway. These potential roosting sites were examined for suitable roosting habitat such as crevices or cavities as well as for any presence of bat sign (e.g., guano, urine staining, or vocalizations) by approaching the potential roost on foot, or, where access was not possible due to barbed wire fencing or narrow road shoulders, by using binoculars. All potential roosting locations were mapped by hand on aerial maps. Potential foraging habitat was also assessed throughout the study area on the basis of vegetation composition, existence of adjacent habitat, and accessibility.

Nighttime acoustic and emergence surveys were not practical at every location determined to be suitable for bat roosting due to the number of surveys required to assess every tree with potentially suitable roosting habitat within the study area; in addition, since many tree-roosting bats frequently switch roosts, surveys indicating absence of bats from a suitable tree roost have limited validity this far in advance of construction. Nighttime surveys were not performed at any of the rock outcrops containing crevices identified as potentially suitable for roosting due to safety concerns regarding the narrow road shoulder, the proximity of these rocky road cuts to the roadway and its associated vehicular traffic, and the evening timing of such surveys, all of which presented inherent danger to the investigating biologists. Therefore, nighttime survey locations were identified following the preliminary daytime assessment as the areas containing potential tree roosts most likely to have colonies or concentrations of bats rather than a few individuals.

Nighttime bat surveys were conducted at three sites (See Figure 2b for Sites A and B and Figure 2c for Site C) to ascertain the level of bat foraging and roosting activity within that portion of the study area, to confirm whether bats use the trees at that location for roosting, and to visually determine the approximate number of any bats utilizing the roosts. Acoustic monitoring was used during these surveys to aid in identifying the bat species present, to determine an index of relative bat activity for that site on that specific evening, and to identify any “hotspots” of bat activity where foraging activity is higher compared to other areas, which can often indicate that an area has greater potential for roosting bats.

Each nighttime survey was initiated 0.5 hour before sunset and continued until 1 hour after sunset. Observers were stationed at vantage points near the potential roost site being surveyed, in positions that would optimize visibility of any area that might be used for roosting. During the survey, the potential tree roosts and surrounding area were monitored for bat activity visually and acoustically, with at least one ultrasonic detector at each location. Pettersson D240X detectors were used in time expansion mode to collect acoustic data during the entirety of the survey, and digital media players were used to record the call files. These data, consisting of full-spectrum sonograms of echolocation calls, were subsequently analyzed using Sonobat 2.9 acoustic analysis software. Species

identifications were made by comparing call recordings with a library of "voucher" calls from known hand-released bats.

Some limitations are inherent in acoustic monitoring and in the analysis of acoustic data and include (but are not limited to) human bias and past experience in data interpretation as well as the fact that some species are not equally detectable or may not be recorded at all. Some bats, such as Mexican free-tailed bats (*Tadarida brasiliensis*), emit loud low-frequency echolocation calls that can be recorded from great distances and will be overrepresented in the data, while "whispering" bats, such as Townsend's big-eared bats (*Corynorhinus townsendii*), emit faint calls that may not be recorded at all. In addition, not all call sequences are identifiable; different bat species may use similar types of echolocation calls, or the same species may use different types of echolocation calls based on the perceptual task and the immediate environment or habitat. Finally, the species composition and activity levels recorded during a single visit to a site may not necessarily reflect long-term patterns of use (e.g., seasonal and nightly use of an area).

## RESULTS AND DISCUSSION

Night roosting was confirmed at each of the three metal culverts within the project area (Figure 2). No bat sign was observed at the concrete box culvert, although it could still be used by bats. Potentially suitable day roosts were observed throughout the project area. All confirmed and potential roosting areas that were identified, as well as the locations where nighttime acoustic and emergence surveys were performed, are mapped on Figure 2. Representative photographs of these areas are included in Figure 3. The bat species with potential to occur in the project area are listed in Table A with descriptions of their corresponding roosting habitat characteristics as well as the probability of each species roosting within the project area or the immediate vicinity.

### Table A: Bat Species Expected to Occur in Project Area

| Species Name (Scientific/Common) | Status | Description of Roosting Habitat | Probability of Occurrence within Project Area |
|---|---|---|---|
| *Antrozous pallidus*<br>Pallid bat | US: FSS<br>CA: SSC | Roosts in crevices in rocky outcrops and cliffs, caves, mines, hollows or cavities of large trees, and anthropomorphic structures such as bridges and buildings; may also roost near the ground in rock piles (Rambaldini 2005). | **High**. Suitable trees for day roosting present. May forage in project area. |
| *Corynorhinus townsendii*<br>Townsend's big-eared bat | US: FSS<br>CA: SSC | Predominantly uses mines, caves, and cave-like areas for roosting. There are some reports of this species utilizing buildings, bridges, rock crevices, and hollow trees as roost sites (Piaggio 2005). | **Low**. No suitable day roosting habitat in project area. May forage in project area. |
| *Eptesicus fuscus*<br>Big brown bat | US: –<br>CA: – | Roosts in trees, caves, and crevices in cliff faces and in anthropomorphic structures such as bridges, buildings, and mines (Perkins 2005). | **Detected**. Suitable trees present for day roosting. May forage in project area. |
| *Euderma maculatum*<br>Spotted bat | US: –<br>CA: SSC | Roosts in crevices and caves, often high in fractured rock cliffs (Chambers & Herder 2005). | **Low**. No suitable day roosting habitat in project area. May forage in project area. |

## Table A: Bat Species Expected to Occur in Project Area

| Species Name (Scientific/Common) | Status | Description of Roosting Habitat | Probability of Occurrence within Project Area |
|---|---|---|---|
| *Eumops perotis*<br>Western mastiff bat | US: –<br>CA: SSC | Primarily a cliff-dwelling species, roosting under exfoliating rock slabs and in crevices in boulders and buildings (Siders 2005). | **Low**. No suitable cliffs or rock outcrops for day roosting present. May forage in project area. |
| *Lasiurus blossevillii*<br>Western red bat | US: FSS<br>CA: SSC | Roosts in the foliage of broad-leafed trees or shrubs within streams or fields, in orchards, and occasionally urban areas; commonly roosts in mature cottonwoods and sycamores (Bolster 2005). | **High**. Suitable large trees present for day roosting. May forage in project area. |
| *Lasiurus cinereus*<br>Hoary bat | US: –<br>CA: – | Roosts in the foliage of coniferous and deciduous trees (Bolster 2005). | **Detected**. Suitable large trees present for day roosting. May forage in project area. |
| *Lasiurus xanthinus*<br>Western yellow bat | US: –<br>CA: SSC | Found in desert regions of the southwest U.S. Individuals roost in the dead fronds of palm trees and have also been documented roosting in cottonwood trees (Williams 2005). | **Low**. Suitable palm tree for day roosting present in project vicinity; may roost in large-leaved deciduous trees within or adjacent to project area. May forage in project area. |
| *Myotis californicus*<br>California myotis | US: –<br>CA: – | Roosts in crevices within caves, mines, rocky hillsides, as well as under tree bark and in buildings (Bogan et al. 2005). | **Detected**. Suitable trees present for day roosting. May forage in project area. |
| *Myotis ciliolabrum*<br>Small-footed myotis | US: –<br>CA: SA | Roosts in cliff and rock crevices, caves, mines, and buildings (Bogan et al. 2005). | **Detected**. Marginally suitable rock outcrops present for day roosting. May forage in project area. |
| *Myotis evotis*<br>Western long-eared myotis | US: –<br>CA: SA | Roosts under exfoliating tree bark and in hollow trees, caves, mines, cliff crevices, and rocky outcrops; may also roost in buildings and bridges. Found in semiarid shrublands, sage, chaparral, and agricultural areas, but is usually associated with coniferous forests (Bogan et al. 2005). | **Low**. Marginally suitable trees present for day roosting; may forage in project area. |
| *Myotis volans*<br>Long-legged myotis | US: –<br>CA: SSC | Roosts in abandoned buildings, cliff crevices, exfoliating tree bark, and hollows within snags; usually overwinters in caves and mine tunnels. Primarily found in coniferous forests, but also occurs seasonally in riparian and desert habitats (Bogan et al. 2005). | **Low**. Marginally suitable trees present for day roosting; may forage in project area. |
| *Myotis yumanensis*<br>Yuma myotis | US: –<br>CA: SA | Roosts in crevices within bridges, buildings, culverts, cliff crevices, caves, mines, and trees, typically near a perennial water source (Bogan et al. 2005). | **Detected**. Suitable trees for day roosting present. May forage in project area. |
| *Nyctinomops femorosaccus*<br>Pocketed free-tailed bat | US: –<br>CA: SSC | Primarily in crevices in cliffs, high rocky outcrops, and slopes (Navo 2005). | **Low**. Suitable cliffs and rock outcrops not present for day roosting. May forage in project area. |

## Table A: Bat Species Expected to Occur in Project Area

| Species Name (Scientific/Common) | Status | Description of Roosting Habitat | Probability of Occurrence within Project Area |
|---|---|---|---|
| *Nyctinomops macrotis*<br>Big free-tailed bat | US: –<br>CA: SSC | Roosts mainly in crevices in cliffs, although there is some documentation of roosting in buildings, caves, and tree cavities. Found in desert shrub, woodlands, and evergreen forests (Navo 2005). | **Low**. Suitable cliffs and rock outcrops not present for day roosting. May forage in project area. |
| *Parastrellus hesperus*<br>Western canyon bat | US: –<br>CA: – | Roosts in small crevices in rocky canyons, caves, mines, bridges, and outcrops; may roost under rocks or in small burrows (Brown 2005). | **Detected**. Marginally suitable rock outcrops present for day roosting. May forage in project area. |
| *Tadarida brasiliensis*<br>Mexican free-tailed bat | US: –<br>CA: – | Roosts in caves, rock crevices on cliff faces, and anthropomorphic structures such as mines, culverts, tunnels, and bridges (BCI 2005). | **Detected**. No suitable rock outcrops or structures present for day roosting. May forage in project area. |

**FSS** – Forest Service Sensitive species. Taxa identified by the Forest Service in Region 5 (Pacific Southwest Region) that are not listed or proposed for listing under the federal Endangered Species Act, but receive special management consideration within the National Forest.
**SA** – Special Animal. Taxon of concern to the California Natural Diversity Database (CNDDB) regardless of its legal or protection status.
**SSC** – California Species of Special Concern. Refers to taxa identified by California Department of Fish and Game (CDFG) as having vulnerable or seriously declining populations.

## Tree Roosts

Bats may roost in the foliage, beneath exfoliating bark, or in crevices and hollows of the mature coast live oak trees (*Quercus agrifolia*) and mature sycamores (*Platanus racemosa)* observed throughout the project area. Suitable cavities and crevices for roosting bats, including those found in broken limbs and beneath exfoliating bark, were observed in snags and on many of the large, mature oaks present throughout the study area. Bat species that are known to commonly utilize crevices and hollows in trees or snags as roosts include pallid bat (*Antrozous pallidus*), big brown bat (*Eptesicus fuscus*), California myotis (*Myotis californicus*), and Yuma myotis (*Myotis yumanensis*).

Bat species of the *Lasiurus* genus commonly roost among the leaves in densely foliated tree canopies of conifer and hardwood tree species, and often near the ends of branches (Kunz and Lumsden 2003). Mature sycamores suitable for the foliage-roosting western red bat (*Lasiurus blossevillii*) occur in several areas situated along and/or adjacent to the right-of-way. Western red bats are highly associated with established riparian habitats containing a variety of riparian tree and shrub species and are particularly associated with sycamores and cottonwoods (Pierson et al., 2006); the proximity of mature sycamore trees within and immediately adjacent to the right-of-way to San Juan Creek and its associated drainages increases the likelihood of roosting by this species within the area. The foliage-roosting hoary bat (*Lasiurus cinereus*) roosts in a variety of coniferous and deciduous trees and is commonly associated with oak trees, which are widely distributed throughout the project area and surrounding open space. Many of these potential tree roosts occur adjacent to high-quality riparian habitat consisting of willows and native herbaceous and shrub species, increasing the value of the surrounding area as foraging habitat and the likelihood that roosting would occur. Large trees suitable for these foliage-roosting species are prevalent within the study area; however, roosting

activity at these locations is difficult to ascertain due to the nature of this roosting behavior (these species tend to roost singly, beneath leaves, and may roost in a different location each night).

### Rock Crevice Roosts

Rocky outcrops are present throughout the project area in the various road cuts along the right-of-way; however, the majority of these sandstone rock outcrops contain poor-quality rock and generally lack crevices suitable for roosting bats. Small crevices were observed in a few of the road cuts; although these are marginally suitable for smaller day-roosting bats such as western canyon bats (*Parastrellus hesperus*)[1] and various *Myotis* species, these outcrops lack the aboveground height and crevice sizes needed by larger bats such as pocketed free-tailed bat (*Nyctinomops femorosaccus*), big free-tailed bat (*Nyctinomops macrotis*), western mastiff bat (*Eumops perotis*), and Mexican free-tailed bat. The observed crevices could not be closely inspected for presence of bat sign due to the narrow road shoulder and proximity of these rocky road cuts to the roadway and its associated vehicular traffic, which presented inherent danger to the investigating biologists.

### Anthropogenic Structures

Humanmade structures were also examined for roosting potential and evidence of use by bats. Three large corrugated metal culvert structures and one concrete box culvert within the project area were examined for potential roosting habitat. Although no crevices suitable for day-roosting bats were observed during examination of the culvert structures, the culverts do contain night-roosting habitat for a variety of bat species, and bat guano indicating use of these structures by night-roosting bats was observed at each of the metal culvert structures during the assessment. Based upon the characteristics of the guano found at the sites, multiple species may be using these existing culverts for night roosting. Species that commonly utilize anthropogenic structures such as culverts for night roosting include the Mexican free-tailed bat, big brown bat, pallid bat, and Yuma myotis; other species that may use these types of roosts include small-footed myotis (*Myotis ciliolabrum*), California myotis, western canyon bat, and Townsend's big-eared bat.

### Nighttime Bat Surveys

No bats were observed exiting the specific potential tree roosts that were surveyed; however, during these nighttime surveys, particularly at Site A (Figure 2b), bats were observed emerging from the hills to the south of SR-74 and then traveling north across the right-of-way toward San Juan Creek. These bats were likely roosting in the large mature oak trees scattered along these hills, and limited foraging was observed above canopy height as the bats moved across the roadway.

Species acoustically detected at Site A included Mexican free-tailed bat, big brown bat, California myotis, Yuma myotis, small-footed myotis, and hoary bat. The species acoustically detected at Site B (Figure 2b) included Mexican free-tailed bat, big brown bat, small-footed myotis, western canyon bat, and hoary bat. No bats were observed during the nighttime emergence survey at Site C (Figure 2c).

[1] Formerly known as *Pipistrellus hesperus*.

## RECOMMENDATIONS

Although a large amount of potential bat roosting habitat is present within the 100 ft buffer of SR-74, the locations in which ground disturbance and construction activities would take place are generally confined to within several feet of the roadway and away from the largest and most mature trees. However, since bats are highly mobile species, there is a potential for the bats to occupy any suitable tree or rock crevice roosting habitat within the right-of-way at any time for day roosting. Disruption and disturbance of maternity colonies and winter hibernacula sites would be particularly significant, as disturbance of these roosting areas can lead to roost abandonment and/or mortality of the bats within that roost.

Impacts to roosting bats would be minimized by scheduling disruptive activities such as tree trimming/removal or rock slope excavation at or near potential roosting sites outside of the winter and maternity seasons to avoid impacts to hibernating bats and nonvolant (flightless) young. Any secondary impacts such as noise and dust in areas adjacent to suitable roosting sites would be reduced through the implementation of Best Management Practices (BMPs) and standard mitigation measures for air quality as specified in the environmental document.

Recommended mitigation and minimization strategies are discussed in detail for each roost habitat type below and summarized in Table B. Implementation of these measures will reduce the project-related impacts to roosting bats to less than significant.

### Table B: Summary of Recommended Mitigation Strategies to Minimize Impacts to Roosting Bats

| Type of Roost | Seasonal Restriction | Recommended Action |
|---|---|---|
| Tree Roost | Avoid work April 1–August 30 and November 1–February 15 | • Any oaks or snags that must be removed shall be removed in two stages: on Day 1, branches identified by a qualified bat biologist will be removed. On Day 2, the remainder of the tree may be removed without supervision<br>• Any large tree limbs containing cavities or crevices that must be removed shall be removed in two stages: on Day 1, branches and/or portions of the tree limb identified by a qualified bat biologist will be removed. On Day 2, the tree limb will be removed and immediately examined by a bat biologist |
| Rock Crevice | Avoid work April 1–August 30 and November 1–February 15 | • Cutting of rock slopes at locations identified as having suitable roost crevices shall be removed in two stages: on Day 1, rock slopes up to within 50 feet of crevices will be cut/ excavated. On Day 2, the remainder of the rock slope containing crevices may be removed |
| Anthropogenic Structure | None | • Replace with similar structures containing features conducive to night-roosting bats |

## Tree Roosts

Roosting bats have potential to occur on site in various mature coast live oak trees containing loose bark, cavities, and crevices that are present within the project area. To avoid potential direct impacts to roosting bats in general and maternity colonies in particular, if trimming of large tree limbs or removal of large trees or snags is necessary for project construction, these large trees and snags should be examined by a bat biologist prior to removal or trimming to ensure that no roosting bats are present. To avoid potential "take" of roosting bats, the following measures should be implemented:

- Avoid removal of large oak trees where practicable.
- If any of the large oak trees or snags identified as containing potential roosting habitat must be removed or altered by activities such as trimming of large limbs, this work should be performed between September 1 and October 31. This time period is after young are volant (flying), but before expected onset of torpor (winter inactivity). This work may also be conducted between February 15 and March 31, following winter torpor and prior to the start of the maternity season. Smaller trees without cavities or crevices may be removed at any time.
- Any oaks or snags that must be removed shall be removed in two stages over two consecutive days as follows: on Day 1, branches and limbs not containing cavities, as identified by a qualified bat biologist, will be removed. On Day 2, the remainder of the tree may be removed without supervision by a bat biologist. The disturbance caused by limb removal, followed by an interval of one evening, will allow bats to abandon the roost.
- Any large tree limbs containing cavities or crevices that must be removed shall be removed in two stages: on Day 1, branches and/or portions of the tree limb identified by a qualified bat biologist will be removed. On Day 2, the remainder of the tree limb will be removed and immediately examined by a bat biologist

Per LSA's understanding of the current project plans, limited tree removal is currently proposed, and impacts to oaks are only anticipated immediately adjacent to the roadway and are not expected to be extensive. In addition, the oak trees situated away from the roadway and outside of the project area generally contain higher-quality roosting habitat than the trees located along the roadway. Therefore, no substantial loss of tree roosting habitat is anticipated.

## Rock Crevices

The shoulder widening may require excavation in road cut areas at the toe of slope and shaving of adjacent slopes. Although the proximity of the crevices within the road cuts to vehicular traffic in the roadway may deter bats from using crevices within the road cuts for roosting, it is possible that roosting bats may use this marginally suitable roosting habitat. To prevent potential impacts to bats that may be roosting in those crevices, excavation and/or cutting of the rock slopes where suitable crevices were identified should not be performed between October 30 and February 15 to avoid impacts to wintering bats, which are largely inactive while in torpor, or between March 15 and August 30 to avoid impacts to maternity colonies and nonvolant young. In addition, rock work at these locations should be performed in a consecutive 2-day period as follows: on Day 1, create disturbance by cutting rock slopes adjacent to the crevices but no closer than 50 ft. The disturbance, followed by an interval of one evening, will result in the evacuation of any bats that were

roosting in the crevices so that when the rock associated with those crevices is removed, no direct impacts will occur. On Day 2, the remainder of the rock slope (including the crevices) can be cut and removed. Alternatively, during construction, a bat biologist may be able to inspect some of the crevices using a fiber optic scope or similar instrument and immediately confirm that no bats are present within those crevices; if this occurs, excavation may proceed that same day, and the two-step removal process would not be necessary.

Since only a small amount of marginally suitable rock crevice habitat is present in the road cuts, no substantial loss of crevice roosting habitat is anticipated, and the new road cuts may even provide crevice roosting habitat that is of equal or better quality.

### Anthropogenic Structures

Based upon the type of roosting habitat present and the characteristics of the guano found at the sites, multiple species may be using the existing culverts for night roosting. When a night roost is eliminated, the energetics for bats to successfully utilize the surrounding foraging area may be negatively affected. Although the quantity of guano observed does not indicate heavy use of these structures by bats, these culverts still may serve an important purpose in the foraging ecology of local bat populations.

Per LSA's understanding of the current project plans, these culverts will be removed and replaced during project construction. If the culverts are replaced with structures similar to the existing culverts, there will be no loss of night-roosting habitat and, depending upon the design of the new structures, night-roosting habitat may even be improved.

## CONCLUSIONS

Although trees containing suitable roosting habitat for bats are present throughout the right-of-way, the proximity of these trees to the high traffic volume and associated vehicular noise along SR-74 likely reduces the desirability of these sites to bats for roosting. More extensive and high-quality habitat is present in the larger stands of mature oak trees within the open space surrounding the project area; since these trees are situated away from sources of disturbance, including vehicular traffic, there is a high probability that bats are roosting in the trees within this more optimal habitat set away from roadway, rather than along the right-of-way. The observations during the nighttime emergence surveys of bats emerging from the clusters of trees on the hillside outside of the project area, and not from any of the trees immediately adjacent to the roadway, seem to support this. However, since bats are a highly mobile species and roost switching is a common behavior for tree-roosting bats, it should not be assumed that bats are absent from suitable tree roosts along the right-of-way. The adjacent riparian areas and their associated insect fauna may provide foraging habitat for a large number of bat species, and bats likely forage and may also roost within and along the edges of oaks within the project area. Since impacts to oaks are not expected to be extensive due to the narrow project footprint, and since the adjacent riparian habitat will not be disturbed during construction, no substantial loss of tree roosting habitat is anticipated.

Only a small amount of marginally suitable rock crevice habitat is present in the road cuts, and the proximity of the road cuts containing these crevices to the high volume of vehicular traffic likely further reduces the desirability of these small and sporadic crevices as roosting habitat to bats;

therefore, no substantial loss of crevice-roosting habitat is anticipated. If the large corrugated metal culverts used for night roosting are replaced with structures similar to the existing culverts, there will be no loss of night-roosting habitat and, depending upon the design of the new structures, habitat may even be improved.

If the seasonal restrictions and protocols described in the recommendations are adhered to for tree trimming, tree removal, and rock slope excavation at the locations identified as containing suitable roosting habitat, impacts to bat maternity colonies and hibernating bats will be minimized to less than significant levels.

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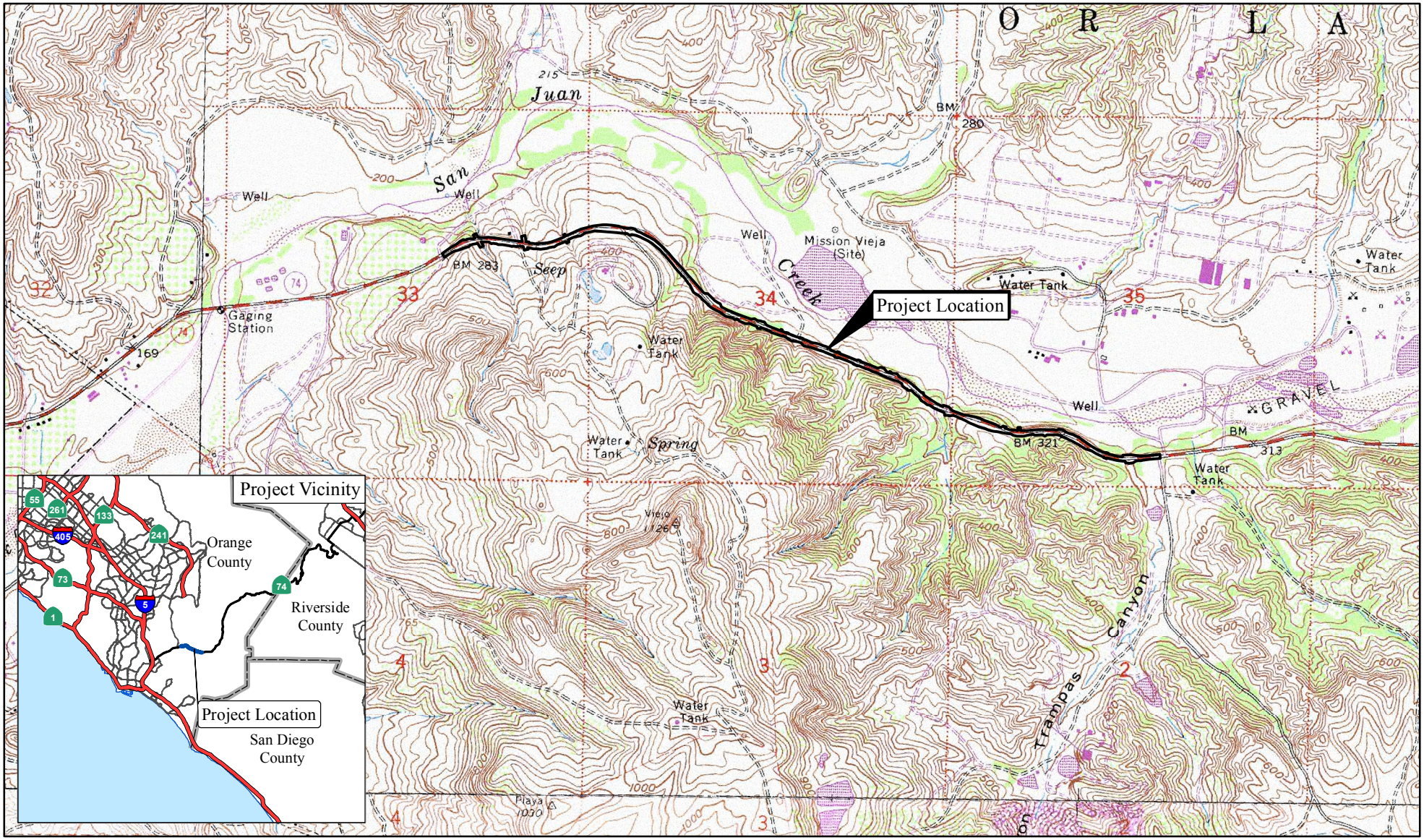


LEGEND

Project Location

FIGURE 1

0 1000 2000

FEET

SOURCE: USGS 7.5' QUAD - CANADA GOBERNADORA ('88)

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*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Project Location Map

12-ORA-74 PM 2.93/5.06

EA 0L7200; Project No. 1200020180

Sheet 1

Sheet 2

LEGEND

- Project Area
- Nighttime Survey Locations
- Corrugated Metal Culvert - Confirmed Night Roosting Location
- Concrete Box Culvert - Potential Night Roosting Location
- Potential Tree Roost
- Rock Crevice

0 60 120
FEET

Eagle Aerial (4/2011); LSA (2012)

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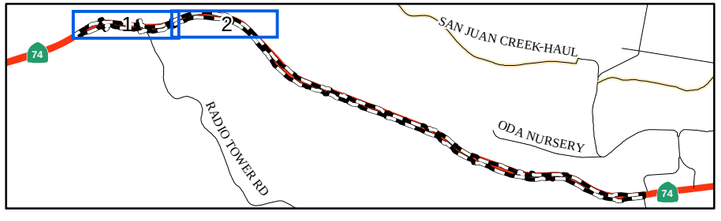
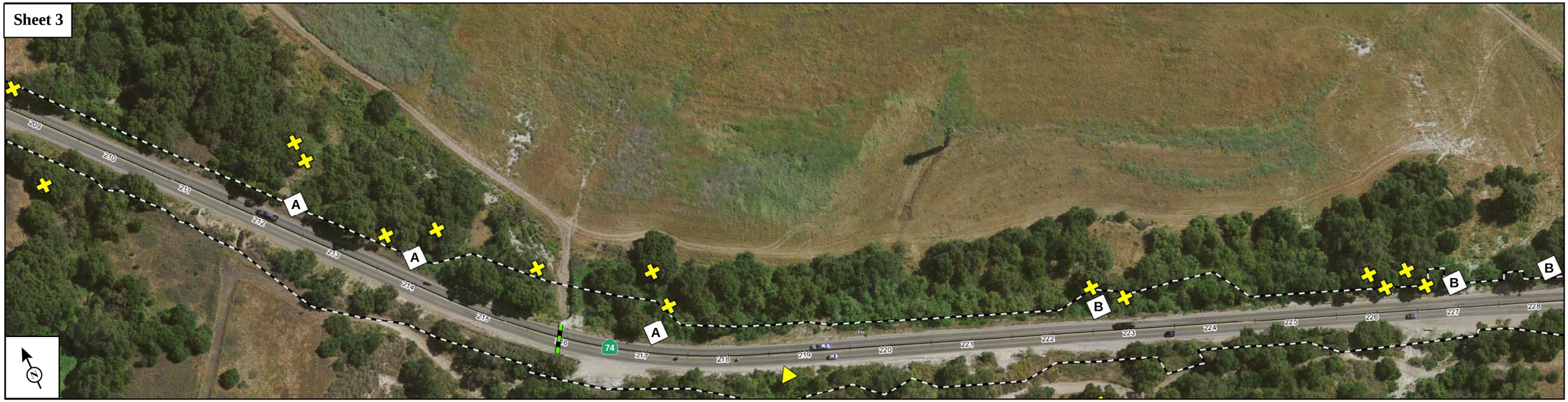



FIGURE 2a

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Locations of Potential Bat Roosts
and Nighttime Survey Locations

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180





LEGEND

- Project Area
- Nighttime Survey Locations
- Corrugated Metal Culvert - Confirmed Night Roosting Location
- Concrete Box Culvert - Potential Night Roosting Location
- Potential Tree Roost
- Rock Crevice
- Project Area

0 60 120
FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012)

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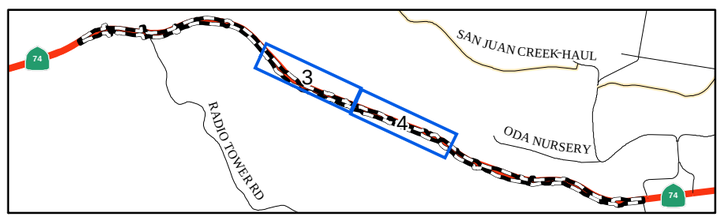
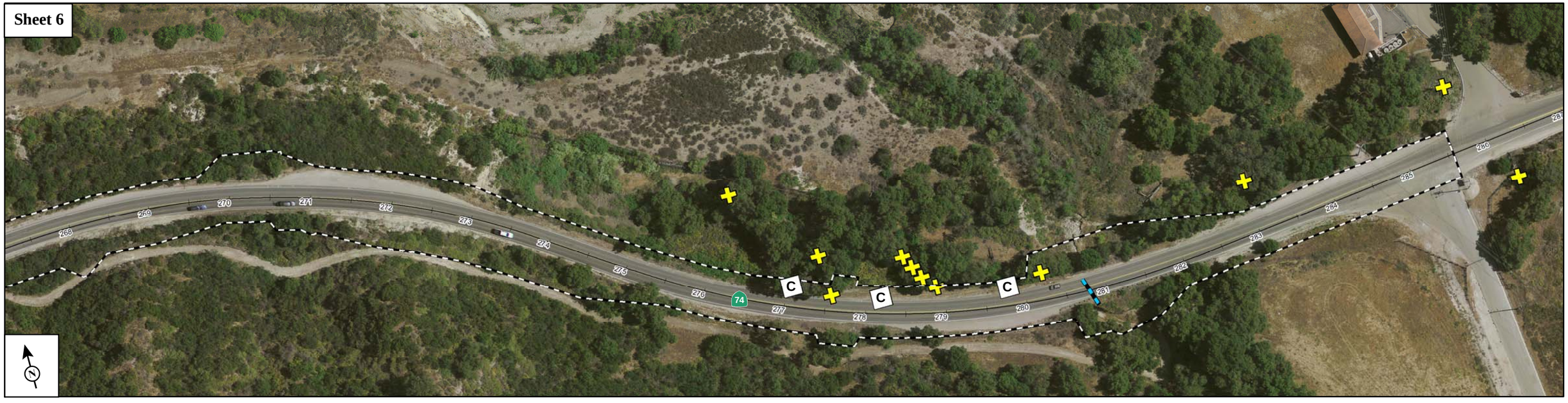



FIGURE 2b

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Locations of Potential Bat Roosts
and Nighttime Survey Locations

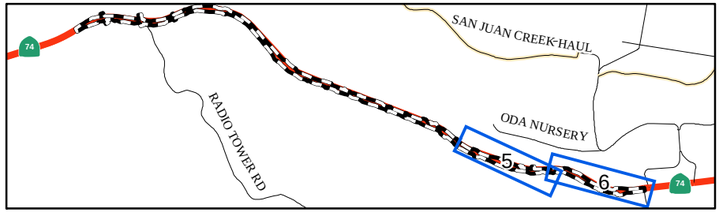
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180


LEGEND

- Project Area
- Nighttime Survey Locations
- Corrugated Metal Culvert - Confirmed Night Roosting Location
- Concrete Box Culvert - Potential Night Roosting Location
- Potential Tree Roost
- Rock Crevice

0 60 120
FEET




SOURCE: Eagle Aerial (4/2011); LSA (2012)

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FIGURE 2c

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Locations of Potential Bat Roosts
and Nighttime Survey Locations

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

Representative view of the coast live oak (*Quercus agrifolia*) trees lining State Route 74 (SR-74) within the survey area.

One of the small sandstone rock outcrops found at several locations in road cuts within the survey area.

One of three large corrugated metal culverts within the survey area that contained bat guano.

Large oak tree with obvious cavities that may be suitable for roosting bats. Many trees like this are present within the survey area.

Large oak tree exhibiting extensive bark exfoliation; the crevices beneath the bark may provide bat roosting habitat.

Large dead trees and snags that may be used by roosting bats.

FIGURE 3

*State Route-74 (Ortega Highway) Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Representative Photos of Potential Bat Roosting Habitat

12-ORA-74 PM 2.93/5.06

EA 0L7200; Project No. 1200020180

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# Appendix H Jurisdictional Delineation Report

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# JURISDICTIONAL DELINEATION REPORT

## STATE ROUTE 74 SAFETY PROJECT
## FROM ANTONIO PARKWAY/LA PATA ROAD TO CRISTIANITOS ROAD

## ORANGE COUNTY, CALIFORNIA

12-ORA-74 PM 2.93/5.06
EA No. 0L7200
Project No. 1200020180

Submitted to:

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LSA Project No. CDT1103 T.O. 5A

November 2012

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## TABLES



## APPENDICES

## INTRODUCTION

The California Department of Transportation (Caltrans), District 12, is evaluating alternatives to reduce accidents on State Route 74 (SR-74). SR-74 currently experiences a high level of cross-centerline collisions. The highway also has an inadequate number of turn-out lanes for emergency stops. Therefore, the purpose of the project is to reduce cross-centerline collisions by widening the shoulders and constructing turn-out lanes.

The proposed SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road (project) is located in unincorporated Orange County (Figure 1, all Figures in Appendix A). The project extends approximately 2.13 miles (mi) from east of Antonio Parkway/La Pata Road to west of Cristianitos Road. SR-74, also known as Ortega Highway, is a major east-west arterial in south Orange County, extending from Interstate 5 (I-5) in the City of San Juan Capistrano northeast to Riverside County, where it intersects with Interstate 15 (I-15) before extending northeast toward the City of Palm Desert in Riverside County.

The proposed project would widen the shoulders, install centerline rumble strips, construct 12-foot (ft) turn-out lanes on the eastbound direction and 15 ft turn-out lanes in the westbound direction, and replace and install metal beam guard rails (MBGR) at various locations. The shoulder widening would require excavation at the toe of slope and shaving adjacent slope in cut areas. The proposed improvements will require roadway excavation, construction of retaining walls (locations yet to be determined), replacement of most culverts, and acquisition of temporary construction easements, permanent easements, and slope easements.

In addition to a No Build Alternative (Alternative 1), one Build Alternative has been proposed. The Build Alternative (Alternative 2) proposes to upgrade the existing nonstandard 2 ft shoulders to 4 ft shoulders in both directions. Caltrans would be the Lead Agency under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) (under the NEPA authority assigned to Caltrans by the United States Department of Transportation in Memorandum of Understanding 6004 and 6005 [effective July 1, 2007]).

## SITE DESCRIPTION

Within the approximately 2.13 mi proposed project alignment, SR-74 consists of an existing two-lane highway (single lane in each direction). The highway currently provides interregional access between the employment centers of South Orange County and the residential centers of Riverside County. The study area portion of SR-74 is in an unincorporated section of southern Orange County and runs parallel to and south of San Juan Creek between the City of San Juan Capistrano and Ronald W. Caspers Wilderness Park. Along the project portion of SR-74, the route has long, straight stretches with occasional short, tight curves and sections with steep slopes and road cuts between sections with rolling grassland, scrub, and woodlands. The highway has a high volume of truck and commuter traffic on weekdays and recreational travelers on weekends on their way to the Santa Ana Mountains in the Cleveland National Forest or to areas farther east.

The proposed project is located in Sections 33, 34, and 35, Township 7 South, and Range 7 West as shown on the United States Geological Survey (USGS) *Cañada Gobernadora, California* 7.5-minute series topographical quadrangle.

There are a variety of vegetation communities located within the study area, including coastal sage scrub, chaparral, coast live oak woodland, and ruderal vegetation.

Elevations range from approximately 280 to 340 ft above mean sea level (amsl) across the entire project area. The topography consists of rolling hills and canyons of the Santa Ana Mountains. Side canyons and narrow washes associated with tributaries of the San Juan Creek occur throughout the project area.

The entire project is located within the San Juan Creek Watershed, which has an overall size of 134 square miles (sq mi). San Juan Creek has a total length of approximately 29 mi, originating in the Santa Ana Mountains of the Cleveland National Forest. San Juan Creek flows west and south through San Juan Canyon and is parallel to Ortega Highway for much of its course. Along its course, San Juan Creek is joined by numerous small tributaries as it passes through the City of San Juan Capistrano and in which one of its main tributaries, Trabuco Creek, joins the Creek before flowing into the Pacific Ocean at Doheny State Beach.

The climate is classified as Mediterranean (i.e., arid climate with hot and dry summers and moderately mild and wet winters). The average annual precipitation varies according to elevation and distance from the ocean and ranges from approximately 11 to 18 inches. Although most of the precipitation occurs from November to May, thunderstorms occur at all times of the year and can cause extremely high precipitation rates. Temperatures typically range between 40 and 91 degrees Fahrenheit ($^{o}$F).

The findings and conclusions presented in this report, including the location and extent of waters subject to regulatory jurisdiction, represent the professional opinion of the consultant biologists. These findings and conclusions should be considered preliminary until verified by the United States Army Corps of Engineers (Corps), California Department of Fish and Game (CDFG), and Regional Water Quality Control Board (RWQCB).

## REGULATORY BACKGROUND

### United States Army Corps of Engineers

The Corps regulates discharges of dredged or fill material into waters of the United States (U.S.). These waters include wetland and nonwetland bodies of water that meet specific criteria. Corps regulatory jurisdiction pursuant to Section 404 of the Clean Water Act (CWA) is founded on a connection, or nexus, between the water body in question and interstate commerce. This connection may be direct, through a tributary system linking a stream channel with traditional navigable waters (TNW) used in interstate or foreign commerce; or may be indirect, through a nexus identified in the Corps regulations. The following definition of waters of the U.S. is from 33 Code of Federal Regulations (CFR) 328.3:

> "The term waters of the United States means:
>
> > (1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce . . . ;

> (2) All interstate waters including interstate wetlands;
>
> (3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams) . . . the use, degradation or destruction of which could affect interstate or foreign commerce . . . ;
>
> (4) All impoundments of waters otherwise defined as waters of the United States under the definition; and
>
> (5) Tributaries of waters defined in paragraphs (a) (1)–(4) of this section."

The Corps typically regulates as waters of the U.S. any body of water displaying an ordinary high water mark (OHWM). Corps jurisdiction over nontidal waters of the U.S. extends laterally to the OHWM or beyond the OHWM to the limit of any adjacent wetlands, if present (33 CFR 328.4). The OHWM is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area." (33 CFR 328.3) Jurisdiction typically extends upstream to the point where the OHWM is no longer perceptible.

As discussed above, Corps regulatory jurisdiction under Section 404 of the CWA is founded on a connection between the water body in question and interstate commerce. This connection may be direct, through a tributary system linking a stream channel with TNW used in interstate or foreign commerce; or may be indirect, through a nexus identified in the Corps regulations. In the past, an indirect nexus could potentially be established if isolated waters provided habitat for migratory birds, even in the absence of a surface connection to a navigable water of the U.S. The 1984 rule that enabled the Corps to expand jurisdiction over isolated waters of this type became known as the Migratory Bird Rule. On January 9, 2001, the United States Supreme Court narrowly limited the Corps jurisdiction of "…nonnavigable, isolated, intrastate…" waters based solely on the use of such waters by migratory birds and, particularly, the use of indirect indicators of interstate commerce (e.g., use by migratory birds that cross state lines) as a basis for jurisdiction. The Court's ruling derives from the case *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers*, No. 99-1178 (SWANCC). The Supreme Court determined that the Corps exceeded its statutory authority by asserting CWA jurisdiction over an abandoned sand and gravel pit in northern Illinois, which provides habitat for migratory birds.

In 2006, the United States Supreme Court further considered the Corps jurisdiction of "…waters of the United States…" in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (126 Supreme Court 2208), collectively referred to as "Rapanos." The Supreme Court concluded that wetlands are "waters of the United States" if they significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as navigable. On June 5, 2007, the Corps issued guidance regarding the Rapanos decision. After consideration of public comments and agencies' experience, revised guidance was issued on December 2, 2008. This guidance states that the Corps will continue to assert jurisdiction over TNW, wetlands adjacent to TNW, relatively permanent nonnavigable tributaries that have a continuous flow at least seasonally (typically 3 months), and wetlands that directly abut relatively permanent tributaries. The Corps will determine jurisdiction over waters that are nonnavigable tributaries that are not relatively permanent and

wetlands adjacent to nonnavigable tributaries that are not relatively permanent only after making a significant nexus finding. The Corps will generally not assert jurisdiction over swales or erosional features, or ditches excavated wholly in and draining only uplands that do not carry a relatively permanent flow of water. However, the Corps does reserve the right to regulate these waters on a case-by-case basis.

Furthermore, the preamble to Corps regulations (Preamble Section 328.3, Definitions) states that the Corps does not generally consider the following waters to be waters of the U.S. The Corps does, however, reserve the right to regulate these waters on a case-by-case basis.

- Nontidal drainage and irrigation ditches excavated on dry land
- Artificially irrigated areas that would revert to upland if irrigation ceased
- Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing
- Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons
- Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for purposes of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the U.S.

Waters found to be isolated and not subject to CWA regulation are often still regulated by the RWQCB under the State Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

## Wetlands

Wetland delineations for Section 404 purposes must be conducted according to the Regional Supplement to the Corps Wetland Delineation Manual: Arid West Region (Regional Supplement) (Corps 2008) and the Corps 1987 Wetland Delineation Manual (1987 Manual) (Environmental Laboratory 1987). Where there are differences between the two documents, the Regional Supplement takes precedence over the 1987 Manual.

The Corps and United States Environmental Protection Agency (EPA) define wetlands as follows:

> "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions."

In order to be considered a jurisdictional wetland under Section 404, an area must possess three wetland characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. Each characteristic has a specific set of mandatory wetland criteria that must be satisfied in order for that particular wetland characteristic to be met. Several indicators may be analyzed to determine whether the criteria are satisfied.

Hydrophytic vegetation and hydric soils indicators provide evidence that episodes of inundation have lasted more than a few days or have occurred repeatedly over a period of years, but do not confirm that an episode has occurred recently. Conversely, wetland hydrology indicators provide evidence that an episode of inundation or soil saturation occurred recently, but do not provide evidence that episodes have lasted more than a few days or have occurred repeatedly over a period of years. Because of this, if an area lacks one of the three characteristics under normal circumstances, the area is considered nonwetland under most circumstances.

Determination of wetland limits may be obfuscated by a variety of natural environmental factors or human activities, collectively called "difficult wetland situations," including cyclic periods of drought and flooding or highly ephemeral stream systems. During periods of drought, for example, bank return flows are reduced and water tables are lowered. This results in a corresponding lowering of ordinary high water and invasion of upland plant species into wetland areas. Conversely, extreme flooding may create physical evidence of high water well above what might be considered ordinary and may allow the temporary invasion of hydrophytic species into nonwetland areas. In the highly ephemeral systems typical of Southern California, these problems are encountered frequently. In these situations, professional judgment based on years of practical experience and extensive knowledge of local ecological conditions come into play in delineating wetlands. The Regional Supplement provides additional guidance for difficult wetland situations.

**Hydrophytic Vegetation.** Hydrophytic vegetation is plant life that grows and is typically adapted for life in permanently or periodically saturated soils. The hydrophytic vegetation criterion is met if more than 50 percent of the dominant plant species from all strata (tree, shrub, herb, and woody vine layers) are considered hydrophytic. Hydrophytic species are those included on the *National List of Plant Species That Occur in Wetlands: California* (*Region 0*) (Reed 1988), published by the United States Fish and Wildlife Service (USFWS). Each species on the list is rated according to a wetland indicator category, as shown in Table A. To be considered hydrophytic, the species must have wetland indicator status (i.e., be rated as Obligate Wetland [OBL], Facultative Wetland [FACW], or Facultative [FAC]).

**Table A: Hydrophytic Vegetation**

| Category | | Probability |
|---|---|---|
| Obligate Wetland | OBL | Almost always occur in wetlands (estimated probability > 99 percent) |
| Facultative Wetland | FACW | Usually occur in wetlands (estimated probability 67–99 percent) |
| Facultative | FAC | Equally likely to occur in wetlands and nonwetlands (estimated probability 34–66 percent) |
| Facultative Upland | FACU | Usually occur in nonwetlands (estimated probability 67–99 percent) |
| Obligate Upland | UPL | Almost always occur in nonwetlands (estimated probability > 99 percent) |

The delineation of hydrophytic vegetation is typically based on the most dominant species from each vegetative stratum (strata are considered separately); when more than 50 percent of these dominant species are hydrophytic (i.e., FAC, FACW, or OBL), the vegetation is considered hydrophytic. In particular, the Corps recommends the use of the "50/20" rule (also known as the dominance test) from the Regional Supplement for determining dominant species. Under this method,

dominant species are the most abundant species that immediately exceed 50 percent of the total dominance measure for the stratum, plus any additional species composing 20 percent or more of the total dominance measure for the stratum. In cases where indicators of hydric soil and wetland hydrology are present but the vegetation initially fails the dominance test, the prevalence index must be used. The prevalence index is a weighted average of all plant species within a sampling plot. The prevalence index is particularly useful when communities only have one or two dominants, where species are present at roughly equal coverage, or when strata differ greatly in total plant cover. In addition, Corps guidance provides that morphological adaptations may be considered when determining hydrophytic vegetation when indicators of hydric soil and wetland hydrology are present (Corps 2008). If the plant community passes either the dominance test or prevalence index after reconsideration of the indicator status of any plant species that exhibit morphological adaptations for life in wetlands, then the vegetation is considered hydrophytic.

**Hydric Soils.**[1] Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.[2] Soils are considered likely to meet the definition of a hydric soil when one or more of the following criteria are met:

1. All Histels except Folistels and Histosols except Folists;
2. Soils that are frequently ponded for a long duration or very long duration[3] during the growing season; or
3. Soils that are frequently flooded for a long duration or very long duration during the growing season.

Hydric soils develop under conditions of saturation and inundation combined with microbial activity in the soil that causes a depletion of oxygen. While saturation may occur at any time of year, microbial activity is limited to the growing season, when soil temperature is above biologic zero (the soil temperature at a depth of 50 centimeters [cm], below which the growth and function of locally adapted plants are negligible). Biogeochemical processes that occur under anaerobic conditions during the growing season result in the distinctive morphologic characteristics of hydric soils. Based on these criteria, a National List of Hydric Soils was created from the National Soil Information System (NASIS) database and is updated annually.

The Regional Supplement has a number of field indicators that may be used to identify hydric soils. The Natural Resources Conservation Service (NRCS) (2003) has also developed a number of field indicators that may demonstrate the presence of hydric soils. These indicators include hydrogen sulfide generation; the accumulation of organic matter; and the reduction, translocation, and/or accumulation of iron and other reducible elements. These processes result in soil characteristics that

[1] The hydric soil definition and criteria included in the 1987 Manual are obsolete. Users of the Manual are directed to the United States Department of Agriculture (USDA) Natural Resources Conservation Service website for the most current information on hydric soils.

[2] Current definition as of 1994 (Federal Register [FR] July 13, 1994).

[3] A long duration is defined as a single event ranging from 7 to 30 days; a very long duration is defined as a single event that lasts longer than 30 days.

persist during both wet and dry periods. Separate indicators have been developed for sandy soils and for loamy and clayey soils.

**Wetland Hydrology.** Under natural conditions, development of hydrophytic vegetation and hydric soils is dependent on a third characteristic: wetland hydrology. Areas with wetland hydrology are those where the presence of water has an overriding influence on vegetation and soil characteristics due to anaerobic and reducing conditions, respectively (Environmental Laboratory 1987). The wetland hydrology parameter is satisfied if the area is seasonally inundated or saturated to the surface for a minimum of 14 consecutive days during the growing season in most years (Corps 2006).

Hydrology is often the most difficult criterion to measure in the field due to seasonal and annual variations in water availability. Some of the indicators that are commonly used to identify wetland hydrology include visual observation of inundation or saturation, watermarks, recent sediment deposits, surface scour, and oxidized root channels (rhizospheres) resulting from prolonged anaerobic conditions.

### California Department of Fish and Game

The CDFG, through provisions of the California Fish and Game Code (Section 1600 et seq.), is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be adversely affected. Streams (and rivers) are defined by the presence of a channel bed and banks and at least an intermittent flow of water. The CDFG regulates wetland areas only to the extent that those wetlands are part of a river, stream, or lake as defined by the CDFG.

With respect to CDFG notifications and agreements, the limits of wetlands are not typically determined. The reason for this is that the CDFG generally includes, within the jurisdictional limits of streams and lakes, any riparian habitat present. Riparian habitat includes willows, mulefat, and other vegetation typically associated with the banks of a stream or lake shorelines and may not be consistent with Corps definitions. In most situations, wetlands associated with a stream or lake would fall within the limits of riparian habitat. Thus, defining the limits of CDFG jurisdiction based on riparian habitat will automatically include any wetland areas and may include additional areas that do not meet Corps criteria for soils and/or hydrology (e.g., where riparian woodland canopy extends beyond the banks of a stream, away from frequently saturated soils).

### Regional Water Quality Control Board

The California RWQCB is responsible for the administration of Section 401 of the CWA. Typically, the areas subject to RWQCB jurisdiction coincide with those of the Corps (i.e., waters of the U.S., including any wetlands). The RWQCB also asserts authority over waters of the State under waste discharge requirements pursuant to the Porter-Cologne Act.

## METHODOLOGY

The fieldwork for this evaluation was conducted by biologists Leo Simone and Erin Martinelli on October 18 and 19, 2011, with a follow-up visit on February 29, 2012, and by Erin Martinelli and

Matthew Teutimez on January 19 and 20, 2012. Where access was available, the study area was surveyed on foot for potential wetland and nonwetland Corps jurisdictional waters, as well as CDFG streambed and riparian resources. Where access was not available (e.g., permission was not granted by private property owner, inaccessibly steep slopes, prevalence of poison oak, or dense vegetation), areas were analyzed from accessible points with the aid of binoculars. In these instances, potentially jurisdictional areas were assumed present if resources were observed (e.g., riparian vegetation, drainages, evidence of OHWM, or v-ditches). In cases where the entire drainage length was not visible and/or accessible, it was assumed that the drainage continued with similar conditions as those in the visible areas within the relatively narrow roadside Biological Study Area (BSA).

Access permitting, areas of potential jurisdiction were evaluated according to Corps and CDFG criteria. The boundaries of the potential jurisdictional areas were observed in the field and mapped on a series of aerial photographs (scale at 1 inch = approximately 100 ft) included as Figure 2, which together show the entire study area. Measurements of federal and State jurisdictional areas mapped during the course of the field investigation were determined by a combination of direct measurements taken in the field and measurements taken from the aerial photographs. The on-site examination was conducted according to the Corps three-parameter (vegetation, soils, and hydrology) method of wetlands delineation (1987 Corps of Engineers Wetland Delineation Manual; 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region), as well as CDFG guidelines. An analysis of current aerial photographs and topographic maps was included in the site evaluation. General site characteristics were also noted. Representative site photos are included as Figure 3.

Two representative sample plots were selected and examined in the field in those areas where wetland jurisdiction was in question or needed to be confirmed. Figure 2 shows the locations of the sample plots and the potential jurisdictional areas. At each sample plot, the dominant plant species were identified and their wetland indicator statuses noted (Reed 1988). Soil characteristics were assessed by digging a soil pit and examining the soil profile to determine the presence or absence of hydric indicators. Soil matrix colors were noted and classified according to the Munsell Soil Color Charts (Munsell 2000). Hydrological conditions, including any surface inundation, saturated soils, groundwater levels, and/or other wetland hydrology indicators were noted. Standard wetland determination data forms were completed for each sample plot; copies of these data forms are included in Appendix B of this report.

A qualitative assessment of the functions and values attributable to the identified potential jurisdictional waters in the project are included in Appendix C. The Corps' requested Aquatic Resources Table is provided as Appendix D.

# RESULTS

## Drainage Descriptions

A total of 20 potential drainage systems and/or culverts located within the project limits adjacent to Ortega Highway were evaluated for this report. Of the 20 drainage systems examined, 13 showed evidence of an OHWM indicating potential Corps jurisdiction. Within the proposed limits of the project site, LSA found no jurisdictional wetland waters of the United States.

Fourteen of the 20 drainage systems evaluated are also subject to CDFG jurisdiction pursuant to Section 1602 of the California Fish and Game Code. Streambed, banks, and adjacent riparian areas, often extending beyond the limits of Corps jurisdiction, are typically considered subject to CDFG jurisdiction. However, there are areas of riparian vegetation within the project limits (Drainage 1-A, 1-B2, 4-A, 4-B, 6-B1, 8-A2, 9-A, 9-B, 10-A, 10-B, 12-A, 12-B, 13-B, 16-A, 16-B, and 17-B) that are believed not to be jurisdictional because they are not associated with a river, stream, or lake.

Table B below describes each of the 20 drainage systems evaluated for this report, showing the total potential Corps and CDFG jurisdictional and nonjurisdictional areas within the project area. For the location of each drainage system evaluated, please see figures in Appendix A.

### Corps Jurisdiction: Nexus to Navigable Waters

All channelized storm water from the proposed project eventually discharges into San Juan Creek (Appendix A). San Juan Creek is situated within the 496 sq mi San Juan Hydrologic Unit (SJHU). The SJHU lies within San Diego, Orange, and Riverside Counties. San Juan Creek extends approximately 29 mi from its headwaters in the Santa Ana Mountains, to where it drains into the Pacific Ocean (a TNW) at Doheny State Beach. San Juan Creek generally parallels Ortega Highway through San Juan Canyon. At least part of San Juan Creek is considered a TNW due to tidal influences at its mouth, approximately 6.3 mi downstream from the study area.

### Corps Jurisdiction: Potential Nonjurisdictional Areas

The drainages within the study area are composed of a mixture of natural earthen bottoms and concrete or riprap-lined channels. All of these drainages have been altered in some form or are wholly humanmade. According to Corps guidance, drainage features may be excluded from CWA jurisdiction if they are wholly in and drain only upland areas and do not carry Relatively Permanent Water (RPW), or they are low-volume swales.

There are seven drainage systems (associated with Drainages 4, 5, 9, 10, 12, 13, and 16) within the project limits that are believed not to be jurisdictional. These seven drainages are potentially nonjurisdictional under the Corps since the Corps typically does not assert jurisdiction over nontidal drainage and irrigation ditches that are excavated on dry land, drain adjacent upland areas, and do not convey relatively permanent flow. Drainages 4, 5, 9, 10, 12, 13, and 16 appear to have been excavated on dry land to drain the road surface and adjacent upland areas and do not convey relatively permanent flow. Therefore, it is expected that the Corps will not assert jurisdiction over these drainages. Additionally, all of these potentially nonjurisdictional waters within the project limits would not satisfy Corps wetland criteria should the Corps assert jurisdiction.

Specific information regarding each drainage system is provided in Table B. See figures in Appendix A for the locations of these drainages.

### Corps Jurisdiction: Potential Nonwetland Waters of the U.S.

There are 13 drainages (Drainages 1, 2, 3, 6, 7, 8, 11, 14, 15, and 17 through 20) where potential Corps jurisdictional nonwetland waters occur because they fit the criteria of being waters of the U.S.

but did not meet the three Corps criteria for wetland determination. Two representative soil sample plots (SP1 at Drainage 1-B1 and SP2 at Drainage 3-B) were examined in the field where wetland jurisdiction was in question, and these two areas were found to not contain wetlands. See Table B and Appendix A for specific information regarding each of these nonwetland drainages.

Hydrophytic vegetation within SP1 in Drainage 1-B1 consisted of Goodding's black willow (*Salix gooddingii*; OBL) and several mulefat (*Baccharis salicifolia;* FACW), however, upland vegetation consisting of California sage brush (*Artemisia californica*), milk thistle (*Silybum marianum*), and shortpod mustard (*Hirschfeldia incana*) was prevalent within the sample plot area so the vegetation criterion was not met. Similarly, soils consisting of loamy sand in the upper 20 inches of the soil profile did not meet the wetland hydric soils requirement (Munsell Soil Color Chart: 10YR 3/2), nor was there evidence of wetland hydrology within this ephemeral drainage.

SP2 in Drainage 3-B was selected due to the presence of a large Goodding's black willow near the outer edge of the project limit; this species is often associated with wetland areas. A blue elderberry (*Sambucus nigra*; FAC) was also present within the sample plot. It is worth noting the complete absence of a shrub or herbaceous stratum within this sample plot. Soils texture was comprised of cobbly sand (Munsell Soil Color Chart: 10YR 3/2), which is not a wetland soil type. Additionally, there was no evidence of wetland hydrology within this ephemeral drainage.

Neither sample plot met the Corps wetland three-parameter requirements (vegetation, soils, and hydrology). No wetland waters were observed within the project limits that met the Corps three-parameter hydrophytic vegetation, hydric soils, and wetland hydrology requirements. Therefore, a total of 0.1 acre (ac) meets the Corps requirements of nonwetland waters of the U.S.

Figure 2 shows the locations of the sample plots. The Wetland Determination Data Forms–Arid West Region are included in Appendix B.

## CDFG Jurisdiction

All the areas satisfying the Corps jurisdictional criteria for waters of the U.S. (Drainage 1, 2, 3, 6, 7, 8, 11, 14, 15, and 17 through 20) are also subject to CDFG jurisdiction pursuant to Section 1602 of the California Fish and Game Code, in addition to Drainage 5, which is a natural riparian corridor with oak woodland. However, Drainage 5 has ephemeral flows that enter a culvert outside of the southern project boundary to pass under the highway and do not daylight until outside of the northern project boundary; therefore, this underground area is not also subject to Corps jurisdiction.

Figure 2 in Appendix A show the extent of CDFG jurisdiction within the project limits. Specific information regarding each drainage system is provided in Table B.

The total acreage of CDFG jurisdiction within the study area is 1.3 ac, which exceeds the total area delineated as Corps jurisdiction (i.e., 0.1 ac) by 1.2 ac.

## Table B: Potential Corps and CDFG Jurisdictional Areas

| Drainage ID<br>A= North side of road<br>B= South side of road | Description | Corps Jurisdiction | CDFG Jurisdiction |
|---|---|---|---|
| 1 | Drainage 1 is a natural drainage that conveys ephemeral flows northward towards San Juan Creek, passing under Ortega Highway through a 6-foot (ft) circular concrete culvert. The culvert also receives flows from two 18-inch corrugated pipes (1-B1 and 1-B2), which collect runoff from the south side of the highway and extend southward from the road, down the artificially graded fill-slope, and discharge the runoff into the drainage below, just before the flow enters the concrete culvert to pass under the highway. | | |
| 1-A | A fill-slope or graded hillside extends down the north side of Ortega Highway. Vegetation consists of ruderal species and coastal sage scrub (CSS). There is no Ordinary High Water Mark (OHWM) within the project boundary. Riparian vegetation occurs just outside of the northern edge of the project boundary, but wetland indicators are not visible. The culvert daylights at, or just outside of, the project boundary. | No | No |
| 1-B1 | A fill-slope or graded hillside extends down the south side of Ortega Highway. An 18-inch corrugated culvert collects runoff from the south side of the highway and extends southward down the slope to the drainage. A 3 ft OHWM enters a 6 ft concrete culvert that passes under the highway. Vegetation in the drainage south of the highway consists primarily of mulefat (*Baccharis salicifolia*) and Goodding's black willow (*Salix gooddingii*), with coast live oaks (*Quercus agrifolia*) extending southward up the riparian corridor. | 1,414 ft² | 1,414 ft² |
| 1-B2 | An 18-inch corrugated pipe collects runoff from the south side of the highway and extends southward down the slope to the drainage. There is no OHWM within the project boundary and vegetation consists of upland species. | No | No |
| 2 | Drainage 2 is a natural drainage that conveys ephemeral flows northward towards San Juan Creek, passing under Ortega Highway through a 24-inch culvert. | | |
| 2-A | The culvert extends from the highway down to a drainage with riparian oak woodland, which begins at a water flow energy-dissipater. Access is restricted, an OHWM was not visible from road (OHWM estimated at 2 ft). | 95 ft² Estimated | 1,657 ft² |
| 2-B | A concrete apron (2 ft OHWM) conveys runoff from the highway to the drainage and culvert below. Riparian vegetation includes willows & oak woodland. | 292 ft² | 1,931 ft² |
| 3 | Drainage 3 is a natural, ephemeral drainage that flows northward toward San Juan Creek, passing under Ortega Highway through a 24-inch corrugated culvert. | | |

**Table B: Potential Corps and CDFG Jurisdictional Areas**

| Drainage ID<br>A= North side of road<br>B= South side of road | Description | Corps Jurisdiction | CDFG Jurisdiction |
|---|---|---|---|
| 3-A | Ephemeral flows that pass through the culvert from the south side of the highway appear to daylight just outside of the project boundary. Access is restricted, so an OHWM could not be observed (OHWM estimated at 2 ft). Vegetation consists of riparian oak woodland. | 100 ft² Estimated | 3,709 ft² |
| 3-B | Water flows (3 ft OHWM) into the culvert to pass under the highway. Vegetation consists of coast live-oaks, Goodding's black willow, blue elderberry (*Sambucus nigra*), California sagebrush (*Artemisia californica*), cliff malacothrix (*Malacothrix saxatilis* var. *tenuifolia*), and ruderal species, namely poison hemlock (*Conium maculatum*) and mustard species. | 168 ft² | 1,363 ft² |
| 4 | Drainage 4 is not a natural drainage. Runoff from the south side of Ortega Highway passes northward under the highway through a 12-inch fiberglass culvert. No OHWM or wetland indicators are present. | | |
| 4-A | Runoff from the south side of the highway passes through the culvert and daylights at this point. No OHWM or wetland indicators are present. There is one oak tree, but it is not associated with a drainage or riparian corridor. | No | No |
| 4-B | Runoff from the south side of the highway enters the culvert at this point. No OHWM or wetland indicators are present. Vegetation consists of ruderal, non-native species. | No | No |
| 5 | Drainage 5 is a natural riparian corridor with oak woodland. However, ephemeral flows enter a culvert outside of the southern project boundary to pass under the highway and do not daylight until outside of the northern project boundary. | | |
| 5-A | The culvert outlet is beyond the project limits. | No | 2,135 ft² |
| 5-B | The culvert inlet is beyond the project limits. | No | 4,493 ft² |
| 6 | Drainage 6 is a natural riparian corridor with oak woodland. A large (10 ft) box culvert conveys some very small ephemeral flows from south to north of Ortega Highway. The box culvert primarily acts as an undercrossing that is part of a trail for cattle/horses, vehicles, and wildlife primary purpose of the culvert is an undercrossing, which also happens to convey some very small flows. | | |
| 6-A1 | Runoff from the westbound side of Ortega Highway enters a 12-inch corrugated plastic pipe, which flows down an artificial concrete apron to the box culvert outlet below. A | 264 ft² | 7,083 ft² |

**Table B: Potential Corps and CDFG Jurisdictional Areas**

| Drainage ID<br>A= North side of road<br>B= South side of road | Description | Corps Jurisdiction | CDFG Jurisdiction |
|---|---|---|---|
| | 5 ft OHWM is visible from the highway and vegetation consists of riparian oak woodland present. | | |
| 6-A2 | A 12-inch corrugated culvert drains runoff from the westbound side of the highway and directs it northward towards Drainage 6. A 2 ft OHWM is visible, but there are no wetland indicators. | 58 ft² | 5,465 ft² |
| 6-B1 | The entry to for the 10 ft concrete box culvert conveys ephemeral [sheet?] flows northward towards San Juan Creek. Vegetation consists of Peruvian pepper trees (*Schinus molle*) and blue elderberry. There is no apparent OHWM and wetland indicators are not present. | No | No |
| 6-B2 | A 2 ft fiberglass culvert drains runoff from the south side of the highway, including flows from an ephemeral drainage in a small canyon. A 1 ft OHWM is visible. Vegetation consists of oak woodland and upland vegetation including toyon (*Heteromeles arbutifolia*), monkey flower (*Mimulus* sp.), California sagebrush, coyote bush (*Baccharis pilularis*), malacothrix, and sweet fennel (*Foeniculum vulgare*). | 15 ft² | 858 ft² |
| 7 | Drainage 7 is a natural riparian corridor with oak woodland. Ephemeral flows are channelled from south to north under the highway through a 24-inch concrete culvert. | | |
| 7-A | Flows from the outfall for the concrete culvert are presumed to create an OHWM north of the highway. The OHWM is obscured by vegetation and access is restricted (assumed 2 ft OHWM). Vegetation consists mainly of oaks and blue elderberry. | 90 ft² Estimated | 3,336 ft² |
| 7-B | Ephemeral flows (1ft OHWM) enter a 24-inch concrete culvert to pass under the highway. Vegetation includes oaks, blue elderberry, coyote bush, and thistle. | 70 ft² | 2,768 ft² |
| 8 | Drainage 8 is a natural riparian corridor with an ephemeral drainage. Flows enter a 24-inch corrugated culvert to pass northward under the highway. | | |
| 8-A1 | The outlet for this 24-inch corrugated culvert extends outside of the project limit. Vegetation consists of oak woodland, blue elderberry, poison oak, and wild cucumber. However, within the project area at this point, the vegetation is not dependent on water from this drainage since it is contained within the corrugated pipe until outside of the project boundary. | No | No |

## Table B: Potential Corps and CDFG Jurisdictional Areas

| Drainage ID<br>A= North side of road<br>B= South side of road | Description | Corps Jurisdiction | CDFG Jurisdiction |
|---|---|---|---|
| 8-A2 | A 12-inch corrugated culvert drains road runoff northward down a concrete apron on the road embankment. However, there is no drainage associated with it, no OHWM and no wetland indicators. Oak woodland at this point is not associated with a drainage. Other vegetation present includes blue elderberry. | No | No |
| 8-B | Flows from an ephemeral drainage (2 ft OHWM) enter a 24-inch corrugated culvert to pass northward under the highway. Vegetation consists of upland species such as California sagebrush. | 41 ft² | 236 ft² |
| 9 | Drainage 9 is not a natural drainage. Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch corrugated culvert. No OHWM or wetland indicators present. | | |
| 9-A | Culvert outlet is outside of project boundary and vegetation consists of upland species, including lemonade berry (*Rhus integrifolia*), toyon, blue elderberry, and Peruvian pepper trees. | No | No |
| 9-B | Culvert inlet collects runoff from the south side of the highway and channels it northward under the highway. There is no OHWM or wetland indicators present and the surrounding vegetation consists of upland species, including lemonade berry, coyote bush and California sagebrush. | No | No |
| 10 | Drainage 10 is not a natural drainage. Runoff from the south side of Ortega Highway passes northward under the highway through an 18-inch corrugated culvert. No OHWM or wetland indicators present. | | |
| 10-A | Culvert outlet appears to be outside of the project boundary. Vegetation consists of California buckwheat (*Eriogonum fasciculatum*), lemonade berry, and oaks. | No | No |
| 10-B | Culvert inlet collects runoff from the south side of the highway and channels it northward under the highway. Vegetation consists of goldenbush (*Isocoma menzesii*) and coyote bush. | No | No |
| 11 | Drainage 11 is a natural riparian corridor with an ephemeral drainage and oak woodland. Flows pass over riprap and enter a 24-inch corrugated culvert to pass northward under the highway. | | |
| 11-A | A deeply incised drainage, with a 4 ft OHWM, forms at the outfall of the culvert on the north side of Ortega Highway. Vegetation consists of riparian oak woodland associated with the drainage. | 62 ft² | 1,446 ft² |

## Table B: Potential Corps and CDFG Jurisdictional Areas

| Drainage ID<br>A= North side of road<br>B= South side of road | Description | Corps Jurisdiction | CDFG Jurisdiction |
|---|---|---|---|
| 11-B | A riprap lined ephemeral drainage channels flows into a 24-inch corrugated culvert on the south side of the highway. Vegetation consists of riparian oak woodland, mugwort (*Artemisia douglasiana*), milk thistle (*Carduus pycnocephalus*), and artichoke thistle (*Cynara cardunculus*). | 71 ft² | 1,690 ft² |
| 12 | Drainage 12 is not a natural drainage. Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch fiberglass culvert. No OHWM or wetland indicators present. | | |
| 12-A | Culvert outlet is obscured by vegetation and is inaccessable. Vegetation consists of poison oak and oak trees. | No | No |
| 12-B | Culvert inlet collects runoff from the south side of the highway and channels it northward under the highway. Vegetation consists of coyote bush, California sagebrush, monkey flower (*Mimulus* sp.), and toyon. | No | No |
| 13 | Drainage 13 is not currently a natural drainage, though it may have been historically. Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch culvert. The culvert extends to the project limit with no OHWM present. Vegetation consists of oak woodland, blue elderberry, mugwort, and poison oak. There are no wetland indicators present. | | |
| 13-A1 | Culvert extends to project limit and no OHWM is present. | No | No |
| 13-A2 | Culvert extends to project limit and no OHWM is present. | No | No |
| 13-B | Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch culvert. No OHWM or wetland indicators present. | No | No |
| 14 | Drainage 14 is a natural riparian corridor with an ephemeral drainage and oak woodland. Flows pass northward under the highway through a 12 ft concrete box culvert. | | |
| 14-A1 | Flows from the outlet for the box culvert create a deeply incised drainage (5 ft OHWM) leading towards San Juan Creek. Vegetation consists of riparian oak woodland. | 649 ft² | 4,166 ft² |

## Table B: Potential Corps and CDFG Jurisdictional Areas

| Drainage ID<br>A= North side of road<br>B= South side of road | Description | Corps Jurisdiction | CDFG Jurisdiction |
|---|---|---|---|
| 14-A2 | Runoff from the highway has created an erosional feature with an OHWM of 1 ft leading towards the outlet for the box culvert. There is no vegetation associated with the erosional feature created by road runoff. Vegetation consists primarily of California sagebrush, white sage (*Salvia apiana*), and oak trees not associated with a drainage. | 15 ft² | 15 ft² |
| 14-B | Ephemeral flows from the riparian corridor enter the 12 ft concrete box culvert and pass northward under the highway towards San Juan Creek. The OHWM is approximately 10 ft. There is no riparian vegetation or wetland indicators present. | 291 ft² | 291 ft² |
| 15 | Drainage 15 collects ephemeral flows from a hillside south of Ortega Highway and channels it, along with runoff from the south side of the highway, into an 18-inch corrugated culvert to pass northward under the highway. There is an OHWM present, but no wetland indicators present. | | |
| 15-A | Runoff from the highway creates an erosional feature on the north side of the road with an OHWM of 3 ft. The outlet for the culvert is not visible within the project boundary. Vegetation consists of oak woodland, monkey flower, and nonnative grasses. | 110 ft² | 1,745 ft² |
| 15-B | The culvert inlet collects ephemeral sheet flow from a hillside south of the highway, however the inlet appears to be at the edge of project limits. The OHWM is approximately 3 ft beyond the project limit and vegetation consists of oak woodland. | No | 656 ft² |
| 16 | Drainage 16 is not currently a natural drainage, though it may have been historically. Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch corrugated culvert. Vegetation consists of oak woodland, toyon, California sagebrush, and poison oak. There are no OHWM or wetland indicators present. | | |
| 16-A | The culvert outlet extends out from the highway slope into the oak tree line below and either reaches or extends beyond the project limit. Access was restricted, so jurisdiction could not be determined beyond the culvert and project limit. | Access restricted | 470 ft² |
| 16-B | Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch culvert. No OHWM or wetland indicators are present. | No | No |
| 17 | Drainage 17 is not currently a natural drainage, though it may have been historically. Runoff from the south side of Ortega Highway passes northward under the highway through an 18-inch corrugated culvert. Vegetation consists of oak woodland, toyon, California sagebrush, and monkey flower. No wetland indicators were observed. | | |

## Table B: Potential Corps and CDFG Jurisdictional Areas

| Drainage ID<br>A= North side of road<br>B= South side of road | Description | Corps Jurisdiction | CDFG Jurisdiction |
|---|---|---|---|
| 17-A | The culvert outlet extends out from the highway slope into the oak woodland and nears the project limit. A 1 ft OHWM begins approximately 2 ft north of the outlet. No wetland indicators were observed. | 39 ft² | 701 ft² |
| 17-B | Runoff from the south side of Ortega Highway passes northward under the highway through an 18-inch culvert. There are no OHWM or wetland indicators present. | No | No |
| 18 | Drainage 18 is not a natural drainage. Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch corrugated culvert. Vegetation consists of oak woodland, blue elderberry, and poison oak. No wetland indicators are present. | | |
| 18-A | The culvert outlet extends northward from the highway into oak woodland and nears the project limit. A 3 ft OHWM begins at the culvert outlet, which is approximately 1 ft south of an existing fence. No wetland indicators were observed. | 69 ft² | 816 ft² |
| 18-B | Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch culvert. There are no OHWM or wetland indicators present. | No | No |
| 19 | Drainage 19 is a natural riparian corridor with oak woodland. A large (12 ft) box culvert conveys ephemeral flows from south to north of Ortega Highway. Due to restricted access, jurisdictional areas were estimated. Vegetation within the project boundary consists primarily of oak woodland and nonnative grasses. No wetland indicators were observed. | | |
| 19-A1 | A 24-inch corregated culvert collects runoff from the north side of the highway and channels it into a concrete v-ditch that directs runoff to the grouted rip-rap energy dissipator at the outlet of the box culvert (19-A2). The 2 ft width of the v-ditch bottom represents the OHWM. | 76 ft² | 2,117 ft² |
| 19-A2 | The outlet for the large concrete box culvert contains a grouted riprap energy dissipator pad. The OHWM appears to be approximately 5 ft wide. Some mulefat grows north of the riprap pad. | 30 ft² | 187 ft² |
| 19-B | The inlet for the 12 ft concrete box culvert conveys ephemeral flows northward towards San Juan Creek. An OHWM of approximately 3 ft was observed. No wetland indicators are present. | 180 ft² | 1,887 ft² |
| 20 | Drainage 20 is not currently a natural drainage, though it may have been historically. Runoff from Ortega Highway is directed towards the Drainage 19 concrete box culvert. | | |

## Table B: Potential Corps and CDFG Jurisdictional Areas

| Drainage ID<br>A= North side of road<br>B= South side of road | Description | Corps Jurisdiction | CDFG Jurisdiction |
|---|---|---|---|
| | Vegetation consists primarily of oak woodland and nonnative grasses. There are no wetland indicators present. | | |
| 20-A1 | A corrugated plastic pipe collects runoff from the north side of the highway and directs it into a concrete v-ditch, which extends towards the riprap pad at the outlet for the Drainage 19 concrete box culvert. The 2 ft width of the v-ditch bottom represents the OHWM. | 177 ft² | 372 ft² |
| 20-A2 | This area may be a remnant of a previously natural drainage, but it does not appear to collect or channel water at this time. Vegetation consists of oak woodland, nonnative grasses and one lemonade berry (*Rhus integrifolia*) shrub. No OHWM or wetland indicators are present. | No | No |
| 20-B | A riprap lined channel directs runoff from the south side of the highway, westward towards the inlet for the Drainage 19 concrete box culvert. The OHWM appears to be approximately 3 to 4 ft and vegetation consists primarily of oak woodland and nonnative grasses. No wetland indicators were observed. | 93 ft² | 2,832 ft² |

CDFG = California Department of Fish and Game
Corps = United States Army Corps of Engineers

# CONCLUSIONS

The findings and conclusions presented in this report, including the location and extent of wetlands and other waters subject to regulatory jurisdiction (or lack thereof), represent the professional opinion of LSA. These findings and conclusions should be considered preliminary until verified by the Corps, CDFG, and RWQCB.

## Corps Jurisdiction

Seven of the drainages within the project limits are potentially nonjurisdictional under the Corps because they are wholly in and drain only upland and do not carry relatively permanent water and do not display an OHWM. Furthermore, these drainages do not appear to contribute substantially to the effects on the chemical, physical, and biological integrity of a TNW. For these reasons, it is LSA's opinion that these seven drainages are not subject to Corps jurisdiction. The remaining 13 drainages appear to have a connection between them and a tributary system linking them to a TNW; therefore, the Corps may assert jurisdiction over them and a significant nexus evaluation may be required. In addition, adjacent topography suggests that some form of "natural" drainage would likely exist if these areas were not developed.

The total acreage of potential Corps nonwetland waters of the U.S. within the study area is 0.1 ac. Table B contains drainage-specific information, and Appendix A shows the locations of these potential nonwetland areas.

## CDFG Jurisdiction

All of the areas satisfying the Corps jurisdictional criteria for waters of the U.S., as described above, are also subject to CDFG jurisdiction pursuant to Section 1602 of the California Fish and Game Code. Drainages that have an earthen bottom and some vegetation are believed to have some minimal value to wildlife and are likely subject to jurisdiction of the CDFG.

The total acreage of CDFG jurisdiction within the study area is 1.3 ac, which exceeds the total area delineated as Corps jurisdiction (i.e., 0.1 ac) by 1.2 ac. See Table B for drainage-specific information, and Figure 2 for the extent of CDFG jurisdiction.

## RWQCB Jurisdiction

Since there is no public guidance on determining RWQCB jurisdictional areas, jurisdiction was determined based on the federal definition of wetlands (three-parameter) and other waters of the U.S.; therefore, the total area of potential RWQCB jurisdiction is 0.1 ac. In addition, similar to the Corps, the RWQCB asserts jurisdiction over roadside drainage ditches on a case-by-case basis.

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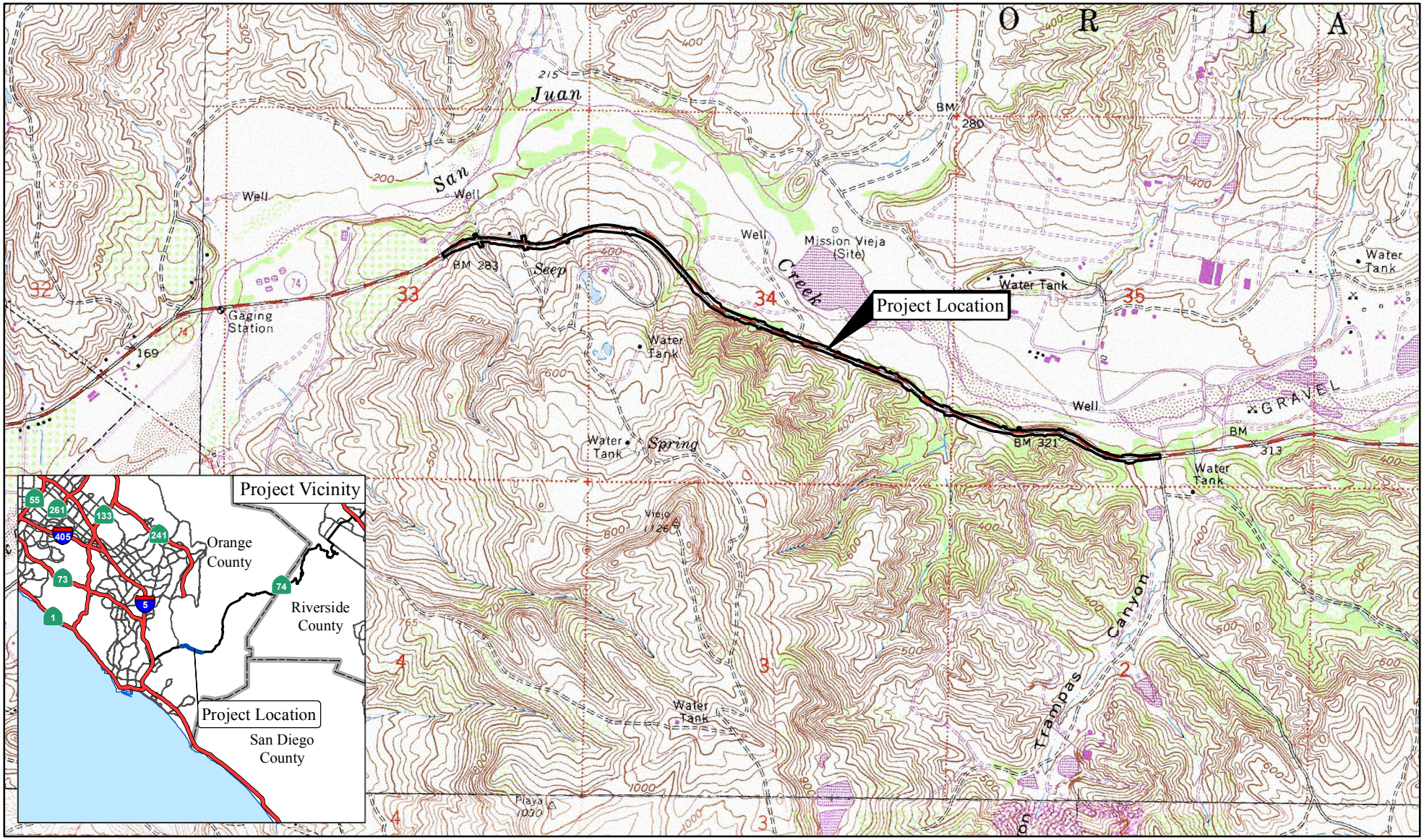
# APPENDIX A

# FIGURES




LEGEND

Project Location

FIGURE 1

0 1000 2000

FEET

SOURCE: USGS 7.5' QUAD - CANADA GOBERNADORA ('88)

I:\CDT1103\GIS\ProjLoc.mxd (11/5/2012)

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Project Location Map

12-ORA-74 PM 2.93/5.06

EA 0L7200; Project No. 1200020180


LEGEND

- Project Limits
- Potentially Jurisdictional Drainage and/or Riparian Vegetation - CDFG
- Potentially Jurisdictional Nonwetland Drainage - Corps
- Soil Pit with ID
- Nonjurisdictional Drainages (e.g. underground culverts, corrugated pipes, and road run-off structures)

N

0 60 120
FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012)

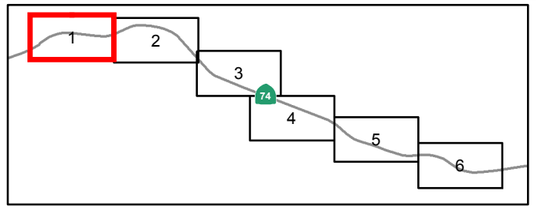



FIGURE 2
Sheet 1 of 6

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Potential Corps and CDFG Jurisdictional Areas by Drainage

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

I:\CDT1103\SR74 Pavement Rehabilitation\GIS\JD.mxd (11/5/2012)

Restricted Access
(Estimated)

3-A

SP-2

3-B

4-A

74

4-B

5-A

5-B

LEGEND

- Project Limits
- Potentially Jurisdictional Drainage and/or Riparian Vegetation - CDFG
- Potentially Jurisdictional Nonwetland Drainage - Corps
- Soil Pit with ID
- Nonjurisdictional Drainages (e.g. underground culverts, corrugated pipes, and road run-off structures)

N

0 60 120
FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012)

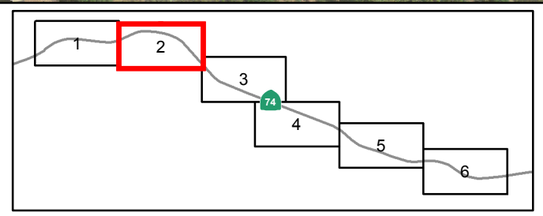



FIGURE 2
Sheet 2 of 6

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Potential Corps and CDFG Jurisdictional Areas by Drainage

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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6-A1
6-A2
6-B1
6-B2
74
7-A
Restricted Access
(Estimated)
7-B
8-A1
8-A2
8-B
9-A

LEGEND

- Project Limits
- Potentially Jurisdictional Drainage and/or Riparian Vegetation - CDFG
- Potentially Jurisdictional Nonwetland Drainage - Corps
- Soil Pit with ID
- Nonjurisdictional Drainages (e.g. underground culverts, corrugated pipes, and road run-off structures)

N

0 60 120
FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012)

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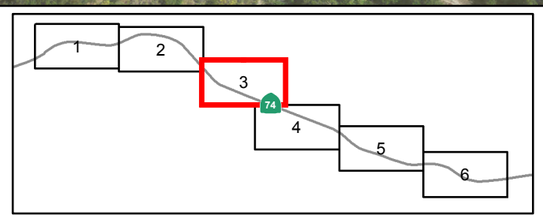


FIGURE 2
Sheet 3 of 6

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Potential Corps and CDFG Jurisdictional Areas by Drainage

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180


LEGEND

- Project Limits
- Potentially Jurisdictional Drainage and/or Riparian Vegetation - CDFG
- Potentially Jurisdictional Nonwetland Drainage - Corps
- Soil Pit with ID
- Nonjurisdictional Drainages (e.g. underground culverts, corrugated pipes, and road run-off structures)

N

0 60 120
FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012)

I:\CDT1103\SR74 Pavement Rehabilitation\GIS\JD.mxd (11/5/2012)

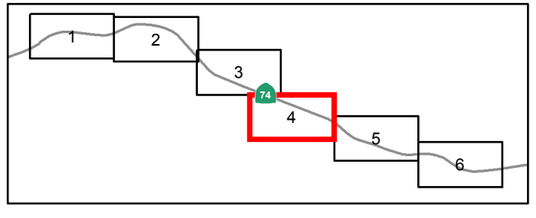


FIGURE 2
Sheet 4 of 6

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Potential Corps and CDFG Jurisdictional Areas by Drainage

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180


LEGEND

- Project Limits
- Potentially Jurisdictional Drainage and/or Riparian Vegetation - CDFG
- Potentially Jurisdictional Nonwetland Drainage - Corps
- Soil Pit with ID
- Nonjurisdictional Drainages (e.g. underground culverts, corrugated pipes, and road run-off structures)

N

0 60 120
FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012)

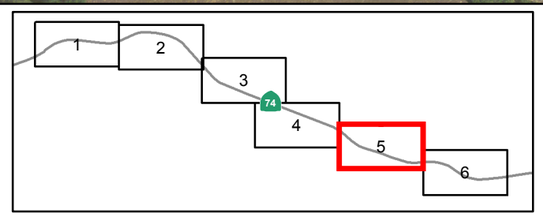


FIGURE 2
Sheet 5 of 6

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Potential Corps and CDFG Jurisdictional Areas by Drainage

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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San Juan Creek

17-A

17-B

18-A

18-B

19-A1

19-A2

Restricted Access
(Estimated)

20-A1

20-A2

19-B

20-B

Cristianitos Rd

74

LEGEND

- Project Limits
- Potentially Jurisdictional Drainage and/or Riparian Vegetation - CDFG
- Potentially Jurisdictional Nonwetland Drainage - Corps
- Soil Pit with ID
- Nonjurisdictional Drainages (e.g. underground culverts, corrugated pipes, and road run-off structures)

0 60 120
FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012)

I:\CDT1103\SR74 Pavement Rehabilitation\GIS\JD.mxd (11/5/2012)

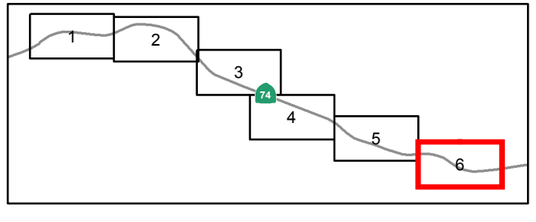


FIGURE 2
Sheet 6 of 6

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Potential Corps and CDFG Jurisdictional Areas by Drainage

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

Drainage 1 is a natural drainage that conveys ephemeral flows towards San Juan Creek, passing under Ortega Highway through a culvert. The culvert also receives runoff from the highway via two corrugated pipes.

Drainage 2 is a natural drainage that conveys ephemeral flows northward towards San Juan Creek, passing under Ortega Highway through a culvert.

Drainage 3 is a natural, ephemeral drainage that flows northward toward San Juan Creek, passing under Ortega Highway through a 24-inch corrugated culvert.

Drainage 4 is not a natural drainage. Runoff from the south side of Ortega Highway passes northward under the highway through a 12-inch fiberglass culvert. No OHWM or wetland indicators are present.

LSA

FIGURE 3
Sheet 1 of 5

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Representative Site Photos
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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Drainage 5 is a natural riparian corridor with oak woodland. However, ephemeral flows enter a culvert outside of the southern project boundary to pass under the highway and do not daylight until outside of the northern project boundary.

Drainage 6 is a natural riparian corridor with oak woodland. A large (10 ft) box culvert conveys ephemeral flows from south to north of Ortega Highway. The box culvert also acts as an undercrossing that is part of a trail for cattle/horses, vehicles, and wildlife.

Drainage 7 is a natural riparian corridor with oak woodland. Ephemeral flows are channelled from south to north under the highway through a 24-inch concrete culvert.

Drainage 8 is a natural riparian corridor with an ephemeral drainage. Flows enter a 24-inch corrugated culvert to pass northward under the highway.

LSA

FIGURE 3
Sheet 2 of 5

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Representative Site Photos
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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Drainage 9 is not a natural drainage. Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch corrugated culvert. No OHWM or wetland indicators present.

Drainage 10 is not a natural drainage. Runoff from the south side of Ortega Highway passes northward under the highway through an 18-inch corrugated culvert. No OHWM or wetland indicators

Drainage 11 is a natural riparian corridor with an ephemeral drainage and oak woodland. Flows pass over riprap and enter a 24-inch corrugated culvert to pass northward under the highway.

Drainage 12 is not a natural drainage. Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch fiberglass culvert. No OHWM or wetland indicators present.

LSA

FIGURE 3
Sheet 3 of 5

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Representative Site Photos
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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Drainage 13 is not currently a natural drainage, though it may have been historically. Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch culvert.

Drainage 14 is a natural riparian corridor with an ephemeral drainage and oak woodland. Flows pass northward under the highway through a 12 ft concrete box culvert.

Drainage 15 collects ephemeral flows from a hillside south of Ortega Highway and channels it, along with runoff from the south side of the highway, into an 18-inch corrugated culvert to pass northward under the highway. There are no wetland indicators present.

Drainage 16 is not currently a natural drainage, though it may have been historically. Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch corrugated culvert. There are no OHWM or wetland indicators present.

LSA

FIGURE 3
Sheet 4 of 5

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Representative Site Photos
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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Drainage 17 is not currently a natural drainage, though it may have been historically. Runoff from the south side of Ortega Highway passes northward under the highway through an 18-inch corrugated culvert. No wetland indicators were observed.


Drainage 18 is not a natural drainage. Runoff from the south side of Ortega Highway passes northward under the highway through a 24-inch corrugated culvert. No wetland indicators are present.

Drainage 19 is a natural riparian corridor with oak woodland. A large (12 ft) box culvert conveys ephemeral flows from south to north of Ortega Highway. Due to restricted access, jurisdictional areas were estimated. No wetland indicators were observed.

Drainage 20 is not currently a natural drainage, though it may have been historically. Runoff from Ortega Highway is directed towards the Drainage 19 concrete box culvert. Vegetation consists primarily of oak woodland and nonnative grasses. There are no wetland indicators present.

LSA

FIGURE 3
Sheet 5 of 5

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Representative Site Photos
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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# APPENDIX B

# WETLAND DETERMINATION DATA FORMS

GPS Point #158

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ortega Highway Pavement Rehab City/County: San Juan Capistrano/Orange Sampling Date: 2/29/2012
Applicant/Owner: Caltrans State: CA Sampling Point: 1 (1-B1)
Investigator(s): L. Simone, E. Martinelli Section, Township, Range:
Landform (hillslope, terrace, etc.): Ephemeral drainage bed Local relief (concave, convex, none): Concave Slope (%): 5
Subregion (LRR): Lat: 33.521714 Long: -117.612735 Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No
Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ No | Is the Sampled Area within a Wetland? Yes No ✓ |
| Hydric Soil Present? | Yes No | |
| Wetland Hydrology Present? | Yes No | |

Remarks:

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 10 Ft.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Salix gooddingii | 30 | Yes | OBL |
| 2. Quercus agrifolia | 5 | No | UPL |
| 3. | | | |
| 4. | | | |
| | 35 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 10 ft.) | | | |
| 1. Mule fat (Bac sal) | 40 | Yes | FACW |
| 2. Art cal | 5 | No | UPL |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 45 | = Total Cover | |
| **Herb Stratum** (Plot size: 10 Ft.) | | | |
| 1. Milk thistle (Silybum marianum) | 70 | Yes | UPL |
| 2. Bristly OX tongue (Picris echioides) | 5 | No | FAC |
| 3. Shortpod mustard (Hirschfeldia incana) | 3 | No | UPL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 78 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| | | = Total Cover | |

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species 30 | x 1 = 30 |
| FACW species 40 | x 2 = 80 |
| FAC species 5 | x 3 = 15 |
| FACU species | x 4 = |
| UPL species 83 | x 5 = 415 |
| Column Totals: 158 (A) | 540 (B) |

Prevalence Index = B/A = 3.4

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No

Remarks:

## SOIL

Sampling Point: _____

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 20 - 24 | 2.5 Y 3/2 | 100 | | 0 | | | Sandy Clay Loam | |
| 0-20 | 10 YR 3/2 | 100 | | 0 | | | Loamy-Sand | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Ephemeral

GPS Point # 159

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ortega Highway Pavement Rehab City/County: San Juan Capistrano/Orange Sampling Date: 2/29/2012
Applicant/Owner: Caltrans State: CA Sampling Point: 2 (3-B)
Investigator(s): L. Simone, E. Martinelli Section, Township, Range:
Landform (hillslope, terrace, etc.): Ephemeral drainage bed Local relief (concave, convex, none): Concave Slope (%): 5
Subregion (LRR): Lat: 33.521916 Long: -117.608722 Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No
Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ No | **Is the Sampled Area within a Wetland?** Yes No ✓ |
| Hydric Soil Present? | Yes No | |
| Wetland Hydrology Present? | Yes No | |

Remarks:

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 10 ft.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Salix goodingii | 80 | Yes | OBL |
| 2. Sambucus mexicana | 10 | No | FAC |
| 3. | | | |
| 4. | | | |
| | 90 = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | = Total Cover | | |
| Herb Stratum (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | = Total Cover | | |
| Woody Vine Stratum (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum 99 % Cover of Biotic Crust

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species 1 | x 1 = 1 |
| FACW species | x 2 = |
| FAC species 1 | x 3 = 3 |
| FACU species | x 4 = |
| UPL species | x 5 = |
| Column Totals: 2 (A) | 4 (B) |

Prevalence Index = B/A = 2

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No

Remarks: Evidence of past flow, but no evidence of recent flow.

## SOIL

Sampling Point: _____

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 3/2 | 100 | | | | | cobbly-Sand | Could not dig deeper |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Evidence of past flow, but no evidence of recent flow.

# APPENDIX C

# ANALYSIS OF FUNCTIONS AND VALUES OF POTENTIAL WATERS OF THE U.S.

# APPENDIX C

# ANALYSIS OF FUNCTIONS AND VALUES OF POTENTIAL WATERS OF THE U.S.

The following is a qualitative assessment of the functions and values attributable to the identified potential jurisdictional waters in the study area. All waters have some degree of functionality, and no single water body can perform all of the functions considered below. The following functions are analyzed at low, moderate, or high value levels. Each individual drainage is analyzed in Table A (below) based on the criteria outlined below.

**Hydrologic Regime.** This function is the ability of a wetland or stream to absorb and store water belowground. The degree of this saturation is dependent on the soil composition and is affected by prior flooding events. For example, clay soils possess more pore space than sandy soils. However, the smaller pore size slows the rate at which water is absorbed and released; therefore, clay soil has a lower capacity to store water than sandy soils. The storage of water belowground allows for the fluctuation between anaerobic and aerobic conditions that benefit environmental conditions necessary for microbial cycling.

**Flood Storage and Flood Flow Modification.** This function is determined based on the ability of a wetland or stream at which the peak flow in a watershed can be attenuated during major storm events and during peak domestic flows to take in surface water that may otherwise cause flooding. This is dependent on the size of the wetland or stream, the amount of water it can hold, and the location in the watershed. For instance, larger wetlands or streams that have a greater capacity to receive waters have a greater ability to reduce flooding. In addition, areas high in the watershed may have more ability to reduce flooding in downstream areas, but areas lower in the watershed may have greater benefits to a specific area. Vegetation, shape, and the configuration of the wetland or stream may also affect flood storage by dissipating the energy of flows during flood events.

**Sediment Retention.** Removal of sediment is the process that keeps sediments from migrating downstream. This is accomplished through the natural process of sediment retention and entrapment. This function is dependent on the sediment load being delivered by runoff into the watershed. Similar to above, the vegetation, shape, and configuration of a wetland will also affect sediment retention if water is detained for long durations, as would be the case with dense vegetation, a bowl-shaped watershed, or slow-moving water. This function would be demonstrated (i.e., high) if the turbidity of the incoming water is greater than that of the outgoing water.

## Table A: Functions and Values of Drainages within the Project Limits

| Drainage Number | Hydrologic Regime | Flood Storage and Flood Flow Modification | Sediment Retention | Nutrient Retention and Transformation | Toxicant Trapping | Social Significance | Wildlife Habitat | Aquatic Habitat |
|---|---|---|---|---|---|---|---|---|
| **1** | Low | Low | Low | Low | Low | Low | Low | Low |
| **2** | Low | Low | Low | Low | Low | Low | Low | Low |
| **3** | Low to Moderate | Low to Moderate | Low to Moderate | Low to Moderate | Low | Low | Low to Moderate | Low |
| **4** | Low | Low | Low | Low | Low | Low | Low | Low |
| **5** | Low to Moderate | Low to Moderate | Low to Moderate | Low to Moderate | Low | Low | Low to Moderate | Low |
| **6** | Moderate | Moderate | Moderate | Moderate | Moderate | Low | Moderate | Moderate |
| **7** | Low to Moderate | Low to Moderate | Low to Moderate | Low to Moderate | Low | Low | Low to Moderate | Low |
| **8** | Low to Moderate | Low to Moderate | Low to Moderate | Low to Moderate | Low | Low | Low to Moderate | Low |
| **9** | Low | Low | Low | Low | Low | Low | Low | Low |
| **10** | Low | Low | Low | Low | Low | Low | Low | Low |
| **11** | Low to Moderate | Low to Moderate | Low to Moderate | Low to Moderate | Low | Low | Low to Moderate | Low |
| **12** | Low | Low | Low | Low | Low | Low | Low | Low |
| **13** | Low to Moderate | Low to Moderate | Low to Moderate | Low to Moderate | Low | Low | Low to Moderate | Low |
| **14** | Moderate | Moderate | Moderate | Moderate | Moderate | Low | Moderate | Moderate |
| **15** | Low to Moderate | Low to Moderate | Low to Moderate | Low to Moderate | Low | Low | Low to Moderate | Low |
| **16** | Low | Low | Low | Low | Low | Low | Low | Low |
| **17** | Low | Low | Low | Low | Low | Low | Low | Low |
| **18** | Low | Low | Low | Low | Low | Low | Low | Low |
| **19** | Moderate | Moderate | Moderate | Moderate | Moderate | Low | Moderate | Moderate |
| **20** | Low | Low | Low | Low | Low | Low | Low | Low |

**Nutrient Retention and Transformation.** Nutrient cycling consists of two variables: uptake of nutrients by plants and detritus turnover, in which nutrients are released for uptake by plants downstream. Wetland systems in general are much more productive with regard to nutrients than upland habitats. The regular availability of water associated with the wetland or stream may cause the growth of plants (nutrient uptake) and associated detritivores and generate nutrients that may be utilized by a variety of aquatic and terrestrial wildlife downstream.

**Toxicant Trapping.** The major processes by which wetlands remove nutrients and toxicants are as follows: (1) by trapping sediments rich in nutrients and toxicants, (2) by absorption to soils high in clay content or organic matter, and (3) through nitrification and denitrification in alternating oxic and anoxic conditions. Removal of nutrients and toxicants is closely tied to the processes that provide for sediment removal.

**Social Significance.** This is a measure of the probability that a wetland or stream will be utilized by the public because of its natural features, economic value, official status, and/or location. This includes its being utilized by the public for recreational uses, such as boating, fishing, birding, walking, and other passive recreational activities. In addition, a wetland or stream that is utilized as an outdoor classroom, is a location for scientific study, or is near a nature center would have a higher social significance standing.

**Wildlife Habitat.** General habitat suitability is the ability of a wetland to provide habitat for a wide range of wildlife. Vegetation is a large component of wildlife habitat. As plant community diversity increases along with connectivity with other habitats, so does potential wildlife diversity. In addition, a variety of open water, intermittent ponding, and perennial ponding is also an important habitat element for wildlife.

**Aquatic Habitat.** The ability of a wetland or stream to support aquatic species requires that there be ample food supply, pool and riffle complexes, and sufficient soil substrate. Food supply is typically in the form of aquatic invertebrates and detrital matter from nearby vegetation. Pool and riffle complexes provide a variety of habitats for species diversity as well as habitat for breeding and rearing activities. Species diversity is directly related to the complexity of the habitat structure.

# APPENDIX D

# CORPS AQUATIC RESOURCES TABLE

| Waters_Name | Cowadin_Code | HGM_Code | Measurement_Type | Amount | Units | Waters_Types | Latitude | Longitude | Local_Waterway |
|---|---|---|---|---|---|---|---|---|---|
| Drainage 1 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.522009 | -117.612822 | San Juan Creek |
| Drainage 2 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.521843 | -117.610696 | San Juan Creek |
| Drainage 3 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.52211 | -117.608736 | San Juan Creek |
| Drainage 4 | U | SLOPE | Area | | SQ_FT | UPLAND | 33.52239 | -117.605688 | San Juan Creek |
| Drainage 5 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.520792 | -117.603166 | San Juan Creek |
| Drainage 6 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.519513 | -117.6017 | San Juan Creek |
| Drainage 7 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.518774 | -117.599523 | San Juan Creek |
| Drainage 8 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.51844 | -117.598449 | San Juan Creek |
| Drainage 9 | U | SLOPE | Area | | SQ_FT | UPLAND | 33.518189 | -117.597637 | San Juan Creek |
| Drainage 10 | U | SLOPE | Area | | SQ_FT | UPLAND | 33.517633 | -117.595856 | San Juan Creek |
| Drainage 11 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.517343 | -117.594927 | San Juan Creek |
| Drainage 12 | U | SLOPE | Area | | SQ_FT | UPLAND | 33.516869 | -117.593412 | San Juan Creek |
| Drainage 13 | U | SLOPE | Area | | SQ_FT | UPLAND | 33.515996 | -117.591791 | San Juan Creek |
| Drainage 14 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.515452 | -117.590589 | San Juan Creek |
| Drainage 15 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.514739 | -117.587951 | San Juan Creek |
| Drainage 16 | U | SLOPE | Area | | SQ_FT | UPLAND | 33.514651 | -117.587216 | San Juan Creek |
| Drainage 17 | U | SLOPE | Area | | SQ_FT | UPLAND | 33.514629 | -117.5852 | San Juan Creek |
| Drainage 18 | U | SLOPE | Area | | SQ_FT | UPLAND | 33.513783 | -117.583063 | San Juan Creek |
| Drainage 19 | RP1FO7 | RIVERINE | Area | | SQ_FT | NRPW | 33.513656 | -117.582133 | San Juan Creek |
| Drainage 20 | U | SLOPE | Area | | SQ_FT | UPLAND | 33.513684 | -117.581607 | San Juan Creek |

# Appendix I Oak Tree Assessment Report

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# OAK TREE INVENTORY

## ORTEGA HIGHWAY

## ANTONIO PARKWAY/LA PATA AVENUE TO CRISTIANITOS ROAD

Submitted to:

Caltrans – District 12
3347 Michelson Drive, Suite 100
Irvine, California 92612

Prepared by:

LSA Associates, Inc.
20 Executive Park, Suite 200
Irvine, California 92614-4731
(949) 553-0666

LSA Project No. CDT1103 T.O. 5A

LSA

November 6, 2012

# OAK TREE INVENTORY REPORT

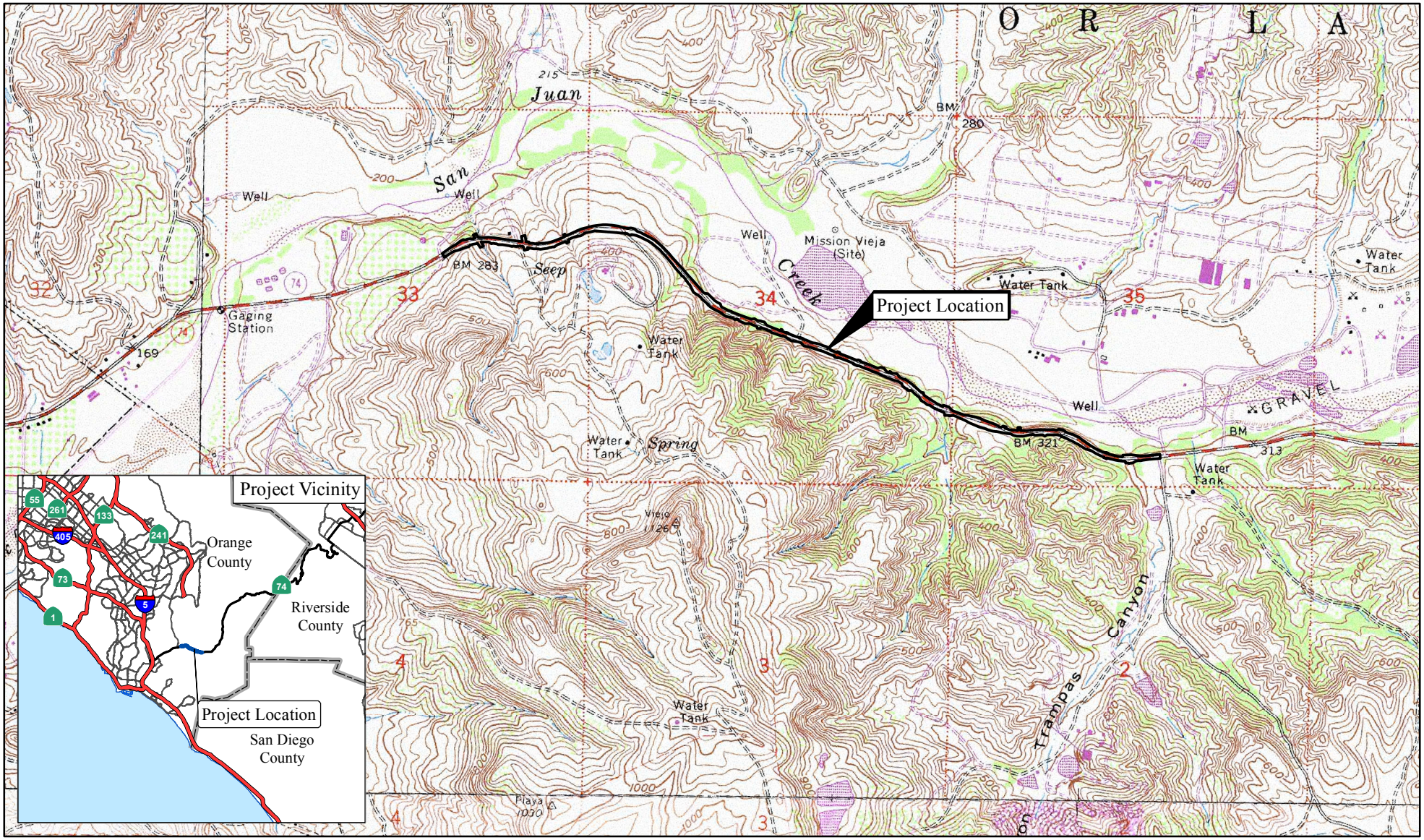
## INTRODUCTION

The purpose of this report is to provide a preconstruction inventory of native oaks (*Quercus* spp.) along the State Route 74 – Ortega Highway (SR-74) corridor, between Antonio Parkway/La Pata Avenue and Cristianitos Road (Figure 1). The limits of the Study Area reflect the proposed construction limits for the SR-74 Pavement Rehabilitation Project (Project). Because the Project is located in unincorporated Orange County (County), there is no specific ordinance that provides guidance for evaluating impacts to oak woodland, nor determining mitigation for those impacts. This report provides a preconstruction inventory for the California Department of Transportation (Caltrans) to use in evaluating the significance of impacts and the appropriate mitigation.

## METHODS

LSA Associates, Inc. (LSA) biologists (including International Society of Arboriculture [ISA] Certified Arborists) inventoried the oak trees and mapped their locations on an aerial photograph. The LSA team was led by Blake Selna (ISA Certified Arborist No. WE-7397A) and Leo Simone (ISA Certified Arborist No. WE-8491A), assisted by Sara Louwsma, Erin Martinelli, Chris Meloni, Corey Knips, and Matt Teutimez. Field surveys were conducted on February 28–29 and March 27, 2012. When accessible, trees were measured to determine diameter at breast height (DBH) and were tagged with a unique alphanumeric identification (e.g., A-1) inscribed on an aluminum tag. If a tree was not fully accessible due to poison oak (*Toxicodendron diversilobum*), steep terrain, or the Caltrans right-of-way fence, the DBH was estimated; if a branch could be reached, the tag was wired to the branch. Tree heights were estimated, and general characteristics (e.g., fire damage, broken branches, poor pruning, and bee hives) were noted on the field survey forms. The tree characteristics can be used at the time of impact evaluation to determine the baseline condition of the tree compared to the postconstruction condition. This will provide context regarding the severity of impacts.

After the completion of the initial field surveys, the project limits were slightly revised, resulting in slivers of areas that were not surveyed in the field. The trees in those areas were inventoried (estimated) using a combination of web-based aerial photographs (i.e., Google Street View, Bing Bird's Eye [11/2012]) and the project aerial photograph base (Eagle Aerial, 4/2011). Because no additional field surveys were completed, no DBH or general characteristics were recorded, and the trees were not tagged. The trees were given alphanumeric identification as described above; however, the standard identifiers were modified with an additional lower-case letter to indicate that they were part of this revised inventory. Locations, exact tree types, and general characteristics shall be verified by the biological monitor once the construction-staking has been completed by the civil surveyor.




LEGEND

Project Location

FIGURE 1

0 1000 2000

FEET

SOURCE: USGS 7.5' QUAD - CANADA GOBERNADORA ('88)

I:\CDT1103\GIS\ProjLoc.mxd (11/5/2012)

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Project Location Map

12-ORA-74 PM 2.93/5.06

EA 0L7200; Project No. 1200020180

## RESULTS

The oak trees along SR-74 are primarily coast live oak (*Quercus agrifolia*) interspersed with patches of scrub oak (*Q. berberdifolia*). During the initial field survey, a total of 456 oaks were observed within the Study Area (376 coast live oaks; and 80 scrub oaks). An additional 17 coast live oaks were estimated to be added to the inventory using aerial photography. No additional scrub oaks were discernible using aerial photography. Additional scrub oak shrubs within the project limits shall be inventoried following project staking. The approximate acreage of canopy for each species was 4.63 acres and 0.37 acre, respectively. The tree identification (tree ID), species, DBH, and height are listed in Appendix A. No DBH was recorded for many of the scrub oaks because they are more shrub-form than tree-form; they are comprised of multiple (5-20 small diameter trunks). Impacts to coast live oaks are often quantified or evaluated based on DBH (cumulative DBH of trunks over 1 inch for multi-trunked trees). Impacts to scrub oak are more often quantified or evaluated based on acreage or canopy size, or simply based on the number of individuals. The aerial photographs provide tree IDs and canopy locations in relation to the limits of the study area (Appendix B).

In many areas, the oaks closest to the road have been trimmed over the years to maintain sight-distance and overhead clearance, thus reducing their overall health and habitat values (Figure 2). The best quality trees were set back from the road and/or separated in elevation (i.e., well above or below the road-grade). Trees that were set back from the road are included in the inventory if any part of their canopies were within the study area. In terms of likely impacts, the best quality trees, farther from the road, are most likely to be avoided or be subject to only minor impacts (e.g., encroachment or branch trimming).

## RECOMMENDATIONS

Following survey staking of the precise construction limits, a qualified biologist/arborist should review the trees that are within or immediately adjacent to the staked limits. The biologist may provide recommendations of ways to minimize or avoid impacts to trees within the construction envelope. Examples of minimization measures include, but are not limited to, avoiding fill around bases of trees, avoiding driving or parking vehicles within the dripline of the canopies, fencing or roping the dripline of the canopies to avoid or minimize unnecessary encroachment, and conducting pruning according to approved standards (Appendix C).

An example of a reduced-quality tree impacted by pruning.

An example of a high-quality tree set back from the road.

FIGURE 2

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*
Ortega Highway Site Photos

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

# APPENDIX A

# OAK TREE INVENTORY TABLE

# APPENDIX A OAK TREE INVENTORY TABLE

| Tree ID | Species | DBH (inches) | Approximate Height (feet) |
|---|---|---|---|
| A-1 | *Q. agrifolia* | 10.5,8,5.5,12 | 30 |
| A-2 | *Q. agrifolia* | 15.5,13.5,11 | 25 |
| A-3 | *Q. agrifolia* | 24,24,24 | 45 |
| A-4 | *Q. agrifolia* | 7,3.5,3.5,4 | 20 |
| A-5 | *Q. agrifolia* | 6,7.5,6 | 15 |
| A-6 | *Q. agrifolia* | 8,4,6,6 | 20 |
| A-7 | *Q. agrifolia* | 8,9,6,8 | 20 |
| A-8 | *Q. agrifolia* | 6.5 | 20 |
| A-9 | *Q. agrifolia* | 3,3,3,4 | 12 |
| A-10 | *Q. agrifolia* | 4.5 | 12 |
| A-11 | *Q. agrifolia* | 4 | 8 |
| A-12 | *Q. agrifolia* | 3,2.5,1 | 12 |
| A-13 | *Q. agrifolia* | 9,10,6 | 25 |
| A-14 | *Q. agrifolia* | 2,2,1 | 7 |
| A-15 | *Q. agrifolia* | 7,8,11.5,9,3,6 | 25 |
| A-16 | *Q. agrifolia* | 6,6,5,5 | 30 |
| A-17 | *Q. agrifolia* | 11.5,3.5,3,2.5,2.5,2 | 35 |
| A-18 | *Q. agrifolia* | 8,7 | 30 |
| A-19 | *Q. agrifolia* | 4 | 20 |
| A-20 | *Q. agrifolia* | 24,20 | 35 |
| A-21 | *Q. agrifolia* | 3.5,2,2 | 12 |
| A-22 | *Q. agrifolia* | 1 | 6 |
| A-23 | *Q. agrifolia* | 3,4 | 12 |
| A-24 | *Q. agrifolia* | 13,10 | 25 |
| A-25 | *Q. agrifolia* | 3 | 10 |
| A-26 | *Q. agrifolia* | 12 | 25 |
| A-27 | *Q. agrifolia* | 8,6,14 | 25 |
| A-28 | *Q. agrifolia* | 5,8,10,12 | 25 |
| A-29 | *Q. berberdifolia* | 10*1 | 7 |
| A-30 | *Q. agrifolia* | 7.5,5.5,3 | 25 |
| A-31 | *Q. agrifolia* | 22 | 50 |
| A-32 | *Q. agrifolia* | 10 | 40 |
| A-33 | *Q. agrifolia* | 17 | 40 |
| A-34 | *Q. agrifolia* | 19 | 50 |
| A-35 | *Q. agrifolia* | 10,10 | 45 |
| A-36 | *Q. agrifolia* | 7 | 25 |
| A-37 | *Q. berberdifolia* | 7*3 | 12 |
| A-38 | *Q. agrifolia* | 4,4,5,6 | 25 |
| A-39 | *Q. agrifolia* | 2,2 | 7 |
| A-40 | *Q. agrifolia* | 1 | 7 |
| A-41 | *Q. agrifolia* | 3 | 6 |
| A-42 | *Q. agrifolia* | 4,2.5 | 8 |
| A-43 | *Q. berberdifolia* | 3, 7*1 | 6 |
| A-44 | *Q. agrifolia* | 10,9,7 | 35 |
| A-45 | *Q. agrifolia* | 12 | 40 |
| A-46 | *Q. agrifolia* | 36 | 45 |
| A-47 | *Q. agrifolia* | 36 | 45 |
| A-48 | *Q. agrifolia* | 24,24,15 | 45 |
| A-49 | *Q. agrifolia* | 12,15 | 25 |
| A-50 | *Q. agrifolia* | 30,36,16,7 | 35 |
| A-51 | *Q. agrifolia* | 3,3 | 12 |
| A-52 | *Q. agrifolia* | 13,14 | 25 |
| A-53 | *Q. agrifolia* | 24 | 30 |
| A-54 | *Q. agrifolia* | 22 | 40 |
| A-55 | *Q. agrifolia* | 10 | 35 |
| A-56 | *Q. agrifolia* | 7 | 40 |
| A-57 | *Q. agrifolia* | 9 | 35 |

| | | | |
|---|---|---|---|
| A-58 | *Q. agrifolia* | 24,19,19,8 | 40 |
| A-59 | *Q. agrifolia* | 6 | 25 |
| A-60 | *Q. agrifolia* | 6,4,3,2 | 25 |
| A-61 | *Q. agrifolia* | 10,4,13 | 35 |
| A-62 | *Q. agrifolia* | 6,10,7,9 | 30 |
| A-63 | *Q. agrifolia* | 10,2,2,6 | 30 |
| A-64 | *Q. agrifolia* | 10 | 35 |
| A-65 | *Q. agrifolia* | 9,9,6,6,5,4 | 30 |
| A-65a | *Q. agrifolia* | not measured | not measured |
| A-66 | *Q. agrifolia* | 3 | 12 |
| A-66a | *Q. agrifolia* | not measured | not measured |
| A-67 | *Q. agrifolia* | 5 | 15 |
| A-68 | *Q. agrifolia* | 1 | 8 |
| A-69 | *Q. agrifolia* | 3 | 12 |
| A-70 | *Q. agrifolia* | 4.5 | 15 |
| A-71 | *Q. agrifolia* | 1.5 | 8 |
| A-72 | *Q. agrifolia* | 15,10.5 | 30 |
| A-73 | *Q. agrifolia* | 7 | 30 |
| A-74 | *Q. agrifolia* | 3,5,8,9 | 30 |
| A-75 | *Q. agrifolia* | 4,5,6 | 25 |
| A-76 | *Q. agrifolia* | 10,10,12 | 35 |
| A-77 | *Q. agrifolia* | 12,16 | 30 |
| A-78 | *Q. agrifolia* | 6,6,10,9 | 30 |
| A-79 | *Q. agrifolia* | 10,11,12,7,6 | 40 |
| A-80 | *Q. agrifolia* | 15,18 | 35 |
| A-81 | *Q. agrifolia* | 6,4 | 20 |
| A-82 | *Q. agrifolia* | 5,4 | 20 |
| A-83 | *Q. agrifolia* | 9 | 25 |
| A-84 | *Q. agrifolia* | 14,6,18,15 | 40 |
| A-85 | *Q. agrifolia* | 20,14,20,14 | 40 |
| A-86 | *Q. agrifolia* | 3.5,6 | 15 |
| A-87 | *Q. agrifolia* | 4,4.5 | 25 |
| A-88 | *Q. agrifolia* | 6 | 30 |
| A-89 | *Q. agrifolia* | 3,7.5,7,9,8,6.5,7,6,6,5.5, 3.5,3.5,5,4,4,5 | 35 |
| A-90 | *Q. agrifolia* | 9 | 35 |
| A-91 | *Q. agrifolia* | 6,7,6.5,4.5 | 30 |
| A-91a | *Q. agrifolia* | not measured | not measured |
| A-92 | *Q. agrifolia* | 8,3,4,3,8,6 | 25 |
| A-92a | *Q. agrifolia* | not measured | not measured |
| A-92b | *Q. agrifolia* | not measured | not measured |
| A-93 | *Q. agrifolia* | 3,5,6,5 | 30 |
| A-94 | *Q. agrifolia* | 5,2,5,3,3,2,4,3 | 25 |
| A-95 | *Q. agrifolia* | 36 | 45 |
| A-96 | *Q. agrifolia* | 12,16 | 35 |
| A-97 | *Q. agrifolia* | 12,18 | 45 |
| A-98 | *Q. agrifolia* | 7,7 | 25 |
| A-99 | *Q. agrifolia* | 7,5,3 | 25 |
| A-100 | *Q. agrifolia* | 2 | 10 |
| A-101 | *Q. agrifolia* | 2,2,1,1 | 8 |
| A-102 | *Q. agrifolia* | 6,6,3,3,3,3,3,3,3,4,4.5,4.5 | 12 |
| A-103 | *Q. agrifolia* | 1,1,1.5 | 4 |
| A-104 | *Q. agrifolia* | 6,5,5,5,5,3,3,3,3 | 15 |
| A-105 | *Q. agrifolia* | 2.5 | 10 |
| A-106 | *Q. berberdifolia* | 1,.5,.5,.5 | 8 |
| A-107 | *Q. agrifolia* | 3,3,3,3,1 | 25 |
| A-108 | *Q. agrifolia* | 4,1 | 25 |
| A-109 | *Q. agrifolia* | 4,4,3,3,3,3,3,2,2 | 25 |
| A-110 | *Q. agrifolia* | 6,5,5,5,4,4, | 25 |
| A-111 | *Q. agrifolia* | 3,2,2,2,2,12 | 30 |
| A-112 | *Q. agrifolia* | 10 | 30 |
| A-113 | *Q. agrifolia* | 1.5 | 10 |
| A-114 | *Q. agrifolia* | 6,3 | 8 |

| | | | |
|---|---|---|---|
| **A-115** | ***Q. agrifolia*** | **36** | **55** |
| **A-116** | ***Q. agrifolia*** | **3,3,3,4,2,2,4** | **30** |
| **A-117** | ***Q. agrifolia*** | **8** | **30** |
| **A-118** | ***Q. agrifolia*** | **15,18** | **45** |
| **A-119** | ***Q. agrifolia*** | **7,2,3.5** | **25** |
| **A-120** | ***Q. agrifolia*** | **4*,2,1** | **6** |
| **A-121** | ***Q. agrifolia*** | **9,13** | **55** |
| **A-122** | ***Q. agrifolia*** | **6*,6,4.5** | **30** |
| **A-123** | ***Q. agrifolia*** | **5,12,26** | **50** |
| **A-124** | ***Q. agrifolia*** | **5.5** | **30** |
| **A-125** | ***Q. agrifolia*** | **4** | **25** |
| **A-126** | ***Q. agrifolia*** | **36** | **55** |
| **A-127** | ***Q. agrifolia*** | **2** | **9** |
| **A-128** | ***Q. agrifolia*** | **3.5** | **9** |
| **A-129** | ***Q. agrifolia*** | **2,3** | **9** |
| **A-130** | ***Q. agrifolia*** | **4,4,4,4,4,3,3,3,6,6** | **35** |
| **A-131** | ***Q. agrifolia*** | **7,7,7** | **35** |
| **A-132** | ***Q. agrifolia*** | **10,4** | **30** |
| **A-133** | ***Q. agrifolia*** | **7.5** | **35** |
| **A-134** | ***Q. agrifolia*** | **6.5,3** | **35** |
| **A-135** | ***Q. agrifolia*** | **22,14** | **45** |
| **A-136** | ***Q. agrifolia*** | **5.5** | **25** |
| **A-137** | ***Q. agrifolia*** | **20,20,3** | **45** |
| **A-138** | ***Q. agrifolia*** | **9,2** | **25** |
| **A-139** | ***Q. agrifolia*** | **2,3** | **15** |
| **A-140** | ***Q. agrifolia*** | **6,3,2** | **35** |
| **A-141** | ***Q. agrifolia*** | **5,3,3** | **20** |
| **A-142** | ***Q. agrifolia*** | **10,8** | **35** |
| **A-143** | ***Q. agrifolia*** | **30** | **45** |
| **A-144** | ***Q. agrifolia*** | **5,2** | **15** |
| **A-145** | ***Q. agrifolia*** | **5** | **10** |
| **A-146** | ***Q. agrifolia*** | **3,3.5,3.5** | **12** |
| **A-147** | ***Q. agrifolia*** | **1,1,2** | **8** |
| **A-148** | ***Q. agrifolia*** | **36** | **45** |
| **B-1** | ***Q. agrifolia*** | **12,5,10,12** | **30** |
| **B-2** | ***Q. agrifolia*** | **26** | **40** |
| **B-3** | ***Q. agrifolia*** | **27** | **40** |
| **B-4** | ***Q. agrifolia*** | **14** | **35** |
| **B-5** | ***Q. agrifolia*** | **25,25** | **45** |
| **B-6** | ***Q. agrifolia*** | **10,10,10,10,12,12,12,14,14** | **30** |
| **B-7** | ***Q. agrifolia*** | **4,4,4** | **12** |
| **B-8** | ***Q. agrifolia*** | **12** | **35** |
| **B-9** | ***Q. agrifolia*** | **2,10** | **25** |
| **B-10** | ***Q. agrifolia*** | **3** | **10** |
| **B-11** | ***Q. agrifolia*** | **13,11,8,5** | **30** |
| **B-12** | ***Q. agrifolia*** | **5,5,6,2** | **15** |
| **B-13** | ***Q. agrifolia*** | **8** | **35** |
| **B-14** | ***Q. agrifolia*** | **2,7,5,10,10** | **35** |
| **B-15** | ***Q. agrifolia*** | **18,23** | **45** |
| **B-15a** | ***Q. agrifolia*** | **not measured** | **not measured** |
| **B-16** | ***Q. agrifolia*** | **17,20** | **45** |
| **B-16a** | ***Q. agrifolia*** | **not measured** | **not measured** |
| **B-16b** | ***Q. agrifolia*** | **not measured** | **not measured** |
| **B-16c** | ***Q. agrifolia*** | **not measured** | **not measured** |
| **B-17** | ***Q. agrifolia*** | **18** | **50** |
| **B-18** | ***Q. agrifolia*** | **18,20** | **60** |
| **B-18a** | ***Q. agrifolia*** | **not measured** | **not measured** |
| **B-19** | ***Q. agrifolia*** | **36** | **75** |
| **B-19a** | ***Q. agrifolia*** | **not measured** | **not measured** |
| **B-20** | ***Q. agrifolia*** | **4,4** | **8** |
| **B-21** | ***Q. agrifolia*** | **24** | **50** |
| **B-22** | ***Q. agrifolia*** | **24** | **40** |

| | | | |
|---|---|---|---|
| B-23 | *Q. agrifolia* | 24 | 45 |
| B-24 | *Q. agrifolia* | 8,6,7 | 30 |
| B-25 | *Q. agrifolia* | 50 | 70 |
| B-26 | *Q. agrifolia* | 3,5 | 25 |
| B-27 | *Q. agrifolia* | 6,6,7,7,8,8 | 30 |
| B-28 | *Q. agrifolia* | 60 | 80 |
| B-29 | *Q. agrifolia* | 17 | 55 |
| B-30 | *Q. agrifolia* | 40,12 | 65 |
| B-31 | *Q. agrifolia* | 18 | 75 |
| B-32 | *Q. agrifolia* | 34 | 40 |
| B-33 | *Q. agrifolia* | 18 | 70 |
| B-34 | *Q. agrifolia* | 6 | 12 |
| B-35 | *Q. agrifolia* | 6,3,2 | 12 |
| B-36 | *Q. agrifolia* | 22 | 50 |
| B-37 | *Q. agrifolia* | 6,6 | 30 |
| B-38 | *Q. agrifolia* | 28,12 | 65 |
| B-39 | *Q. agrifolia* | 24,5 | 60 |
| B-40 | *Q. agrifolia* | 5 | 15 |
| B-41 | *Q. agrifolia* | 4 | 8 |
| B-42 | *Q. agrifolia* | 11,11 | 50 |
| B-43 | *Q. agrifolia* | 18,5,7 | 70 |
| B-44 | *Q. agrifolia* | 11 | 25 |
| B-45 | *Q. agrifolia* | 3,3,3 | 10 |
| B-46 | *Q. agrifolia* | 10,12 | 40 |
| B-47 | *Q. agrifolia* | 16 | 60 |
| B-48 | *Q. agrifolia* | 30 | 70 |
| B-49 | *Q. agrifolia* | 7,5,5,3 | 35 |
| B-50 | *Q. agrifolia* | 3,3.5,4 | 20 |
| B-51 | *Q. agrifolia* | 12,4,5 | 30 |
| B-52 | *Q. agrifolia* | 10,10 | 40 |
| B-53 | *Q. agrifolia* | 4 | 15 |
| B-54 | *Q. agrifolia* | 5,3,3 | 15 |
| B-55 | *Q. agrifolia* | 24,24 | 70 |
| B-56 | *Q. agrifolia* | 26 | 60 |
| B-57 | *Q. agrifolia* | 14 | 50 |
| B-58 | *Q. agrifolia* | 6,4 | 25 |
| B-59 | *Q. agrifolia* | 7 | 20 |
| B-60 | *Q. agrifolia* | 2 | 12 |
| B-61 | *Q. agrifolia* | 4,4 | 15 |
| B-62 | *Q. agrifolia* | 7,2 | 20 |
| B-63 | *Q. agrifolia* | 2,3,4 | 12 |
| B-64 | *Q. agrifolia* | 30,30 | 75 |
| B-65 | *Q. agrifolia* | 3 | 10 |
| B-66 | *Q. agrifolia* | 3 | 10 |
| B-67 | *Q. agrifolia* | 24 | 70 |
| B-68 | *Q. agrifolia* | 36,10 | 75 |
| B-69 | *Q. agrifolia* | 3,3,5,6 | 15 |
| B-70 | *Q. agrifolia* | 12 | 35 |
| B-71 | *Q. agrifolia* | 2,2,2 | 6 |
| B-72 | *Q. agrifolia* | 5 | 20 |
| B-73 | *Q. agrifolia* | 4,4,6,6,10,10 | 40 |
| B-74 | *Q. agrifolia* | 1,1,2,2 | 4 |
| B-75 | *Q. agrifolia* | 9,9,8,4,5 | 35 |
| B-76 | *Q. agrifolia* | 10,10,6,6 | 30 |
| B-77 | *Q. agrifolia* | 8,5 | 35 |
| B-78 | *Q. agrifolia* | 6,7,8 | 35 |
| B-79 | *Q. agrifolia* | 5,3,1,1 | 15 |
| B-80 | *Q. agrifolia* | 8,6 | 25 |
| B-81 | *Q. agrifolia* | 30 | 75 |
| B-82 | *Q. agrifolia* | 3,2 | 20 |
| B-83 | *Q. agrifolia* | 12,7,4,4 | 15 |
| B-84 | *Q. agrifolia* | 26 | 75 |

| | | | |
|---|---|---|---|
| B-85 | *Q. agrifolia* | 26 | 60 |
| B-86 | *Q. agrifolia* | 4 | 20 |
| B-87 | *Q. agrifolia* | 1,2,2,3,3,4,5,6 | 25 |
| B-88 | *Q. agrifolia* | 28 | 60 |
| B-89 | *Q. agrifolia* | 12 | 20 |
| B-90 | *Q. agrifolia* | 24 | 75 |
| B-91 | *Q. agrifolia* | 24 | 75 |
| B-92 | *Q. agrifolia* | 26 | 65 |
| B-93 | *Q. agrifolia* | 2 | 4 |
| B-94 | *Q. agrifolia* | 6,6 | 25 |
| B-95 | *Q. agrifolia* | 4 | 10 |
| B-96 | *Q. agrifolia* | 5,5 | 40 |
| B-97 | *Q. agrifolia* | 5,3,2 | 30 |
| B-98 | *Q. agrifolia* | 5 | 15 |
| B-99 | *Q. agrifolia* | 18 | 40 |
| B-100 | *Q. agrifolia* | 40 | 80 |
| B-101 | *Q. agrifolia* | 17,5,17 | 65 |
| B-102 | *Q. agrifolia* | 30 | 75 |
| B-103 | *Q. agrifolia* | 8,9,7 | 30 |
| B-104 | *Q. agrifolia* | 16,12 | 25 |
| B-105 | *Q. agrifolia* | 2 | 5 |
| B-106 | *Q. agrifolia* | 12 | 30 |
| B-107 | *Q. agrifolia* | 10,8,5,2,5 | 35 |
| B-108 | *Q. agrifolia* | 6 | 25 |
| B-109 | *Q. agrifolia* | 8,5,12,7,6 | 25 |
| B-110 | *Q. agrifolia* | 20,8 | 45 |
| B-111 | *Q. agrifolia* | 11 | 40 |
| B-112 | *Q. agrifolia* | 30 | 60 |
| B-113 | *Q. agrifolia* | 10,12 | 30 |
| B-114 | *Q. agrifolia* | 5,5,5 | 25 |
| B-115 | *Q. agrifolia* | 6,7,8 | 25 |
| B-116 | *Q. agrifolia* | 24,24 | 70 |
| B-117 | *Q. agrifolia* | 7 | 25 |
| B-118 | *Q. agrifolia* | 8 | 35 |
| B-119 | *Q. agrifolia* | 10,7 | 35 |
| B-120 | *Q. agrifolia* | 4 | 12 |
| B-121 | *Q. agrifolia* | 4,4,2 | 7 |
| B-122 | *Q. agrifolia* | 30 | 40 |
| B-123 | *Q. agrifolia* | 24 | 45 |
| B-124 | *Q. agrifolia* | 24,24 | 50 |
| B-125 | *Q. agrifolia* | 15 | 35 |
| B-126 | *Q. agrifolia* | 12,12 | 35 |
| B-127 | *Q. agrifolia* | 12 | 25 |
| B-128 | *Q. agrifolia* | not visible--obscured by poison oak | 35 |
| B-129 | *Q. agrifolia* | 10,4,3 | 35 |
| B-130 | *Q. agrifolia* | 6,6,4,3 | 35 |
| B-131 | *Q. agrifolia* | 10,12,3,14,10 | 30 |
| B-132 | *Q. agrifolia* | 10,7,6,6,5,5,1,1,1,1 | 20 |
| B-133 | *Q. agrifolia* | 36,10,8,14,6,3 | 30 |
| B-134 | *Q. agrifolia* | 2,5,6 | 30 |
| B-135 | *Q. agrifolia* | 7,7,6,3,2,1,1,2 | 15 |
| B-136 | *Q. agrifolia* | 3,3,3,4 | 15 |
| B-137 | *Q. agrifolia* | 6,2,6,5,5,6 | 20 |
| B-137a | *Q. agrifolia* | not measured | not measured |
| B-137b | *Q. agrifolia* | not measured | not measured |
| B-137c | *Q. agrifolia* | not measured | not measured |
| B-138 | *Q. berberdifolia* | N/A | 10 |
| B-139 | *Q. berberdifolia* | N/A | 12 |
| B-140 | *Q. berberdifolia* | N/A | 4 |
| B-141 | *Q. berberdifolia* | N/A | 15 |
| B-142 | *Q. berberdifolia* | N/A | 6 |
| B-143 | *Q. berberdifolia* | N/A | 4 |

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|---|---|---|---|
| B-144 | *Q. berberdifolia* | N/A | 6 |
| B-145 | *Q. berberdifolia* | N/A | 6 |
| B-146 | *Q. berberdifolia* | N/A | 5 |
| B-147 | *Q. berberdifolia* | N/A | 7 |
| B-148 | *Q. berberdifolia* | N/A | 6 |
| B-149 | *Q. berberdifolia* | N/A | 5 |
| B-150 | *Q. berberdifolia* | N/A | 4 |
| B-151 | *Q. berberdifolia* | N/A | 8 |
| B-152 | *Q. berberdifolia* | N/A | 5 |
| B-153 | *Q. berberdifolia* | N/A | 5 |
| B-154 | *Q. berberdifolia* | N/A | 12 |
| B-155 | *Q. berberdifolia* | N/A | 10 |
| B-156 | *Q. berberdifolia* | N/A | 7 |
| B-157 | *Q. berberdifolia* | N/A | 5 |
| C-1 | *Q. agrifolia* | 4,5,3,5,5,4 | 20 |
| C-2 | *Q. agrifolia* | 10,19 | 35 |
| C-3 | *Q. agrifolia* | 6,7,8,1 | 30 |
| C-4 | *Q. agrifolia* | 7,7,6,5 | 35 |
| C-5 | *Q. agrifolia* | 4,4,3,4,3,3,3,5,5,1,1,1 | 20 |
| C-6 | *Q. agrifolia* | 3 | 10 |
| C-7 | *Q. agrifolia* | 4,4,4 | 15 |
| C-8 | *Q. agrifolia* | 6,9,10 | 30 |
| C-9 | *Q. agrifolia* | 8,7 | 20 |
| C-10 | *Q. agrifolia* | 5,6,7 | 20 |
| C-11 | *Q. agrifolia* | 5,3 | 15 |
| C-12 | *Q. agrifolia* | 6 | 20 |
| C-13 | *Q. berberdifolia* | N/A | 15 |
| C-14 | *Q. agrifolia* | 6 | 20 |
| C-15 | *Q. agrifolia* | 5 | 12 |
| C-16 | *Q. agrifolia* | 13,12 | 30 |
| C-17 | *Q. agrifolia* | 7 | 15 |
| C-18 | *Q. agrifolia* | 1,1,1,1,1,3,4,4 | 15 |
| C-19 | *Q. agrifolia* | 6 | 20 |
| C-20 | *Q. agrifolia* | 6 | 12 |
| C-21 | *Q. agrifolia* | 3,5,4 | 15 |
| C-22 | *Q. agrifolia* | 4 | 15 |
| C-23 | *Q. agrifolia* | 3,4,5 | 20 |
| C-24 | *Q. agrifolia* | 6 | 15 |
| C-25 | *Q. agrifolia* | 23,24 | 40 |
| C-26 | *Q. agrifolia* | 1 | 10 |
| C-27 | *Q. agrifolia* | 1,1 | 10 |
| C-28 | *Q. agrifolia* | 1,1,1,4,13 | 40 |
| C-29 | *Q. agrifolia* | 1,1 | 15 |
| C-30 | *Q. agrifolia* | 1 | 15 |
| C-31 | *Q. agrifolia* | 6 | 20 |
| C-32 | *Q. agrifolia* | 6 | 25 |
| C-33 | *Q. agrifolia* | 3 | 10 |
| C-34 | *Q. agrifolia* | 25 | 35 |
| C-35 | *Q. agrifolia* | 15 | 40 |
| C-36 | *Q. agrifolia* | 4 | 15 |
| C-37 | *Q. agrifolia* | 4,4,5,5 | 25 |
| C-38 | *Q. agrifolia* | 20,22 | 40 |
| C-39 | *Q. agrifolia* | 1,4,4,6,4,5,3 | 20 |
| C-40 | *Q. agrifolia* | 6,10,5,10,7,7,6 | 25 |
| C-41 | *Q. agrifolia* | 25 | 35 |
| C-41a | *Q. agrifolia* | not measured | not measured |
| C-41b | *Q. agrifolia* | not measured | not measured |
| C-42 | *Q. berberdifolia* | N/A | 5-10 |
| C-43 | *Q. berberdifolia* | N/A | 5-10 |
| C-44 | *Q. berberdifolia* | N/A | 5-10 |
| C-45 | *Q. berberdifolia* | N/A | 5-10 |
| C-46 | *Q. berberdifolia* | N/A | 5-10 |

| | | | |
|---|---|---|---|
| C-47 | *Q. berberdifolia* | N/A | 5-10 |
| D-1 | *Q. agrifolia* | 2.5,2.5,2.5,3.5,3 | 15 |
| D-2 | *Q. agrifolia* | 7.5 | 20 |
| D-3 | *Q. agrifolia* | 18 | 20 |
| D-4 | *Q. agrifolia* | 3.5,1.5,1.5,5.5,6,1.5,5 | 25 |
| D-5 | *Q. agrifolia* | 2,5,2.5,6,4.5,4,4,3.5,6.5,7,6,5.5,3.5,4.5,7,4.5,3 | 30 |
| D-6 | *Q. agrifolia* | 2,2.5,2.5,2 | 20 |
| D-7 | *Q. agrifolia* | 4,4,5,4.5,2,1.5 | 20 |
| D-8 | *Q. agrifolia* | 24,3.5,3.5,2.5,2.5,4,3,2.5,2,2.5,2.5,3.5,1.5,5.5,2.5,1.5,1.5,1.5,2.5,1.5,2.5,2,3,4,2,1.5 | 55 |
| D-9 | *Q. agrifolia* | 3 | 15 |
| D-10 | *Q. berberdifolia* | N/A | 11 |
| D-11 | *Q. agrifolia* | 11.5,12,7.5,2,1.5 | 25 |
| D-12 | *Q. agrifolia* | 15,11.5,2.5,2.5,2,1.5,1.5,2.5,2.5,2.5,17 | 25 |
| D-13 | *Q. berberdifolia* | N/A | 9 |
| D-14 | *Q. berberdifolia* | N/A | 5 |
| D-15 | *Q. berberdifolia* | N/A | 6 |
| D-16 | *Q. berberdifolia* | N/A | 6 |
| D-17 | *Q. agrifolia* | 10.5,12.5,4,1,1.5,1.5 | 30 |
| D-18 | *Q. berberdifolia* | N/A | 6 |
| D-19 | *Q. agrifolia* | 4,4,3,4,11 | 20 |
| E-1 | *Q. agrifolia* | 11,4 | 20 |
| E-2 | *Q. agrifolia* | 3,3,2 | 10 |
| E-3 | *Q. agrifolia* | 6,6,5,5,5,3,3 | 25 |
| E-4 | *Q. agrifolia* | 24 | 30 |
| E-5 | *Q. agrifolia* | 6,7 | 25 |
| E-6 | *Q. agrifolia* | 3 | 12 |
| E-7 | *Q. agrifolia* | 8 | 30 |
| E-8 | *Q. agrifolia* | 5,4 | 30 |
| E-9 | *Q. agrifolia* | 5 | 20 |
| E-10 | *Q. agrifolia* | 8,8,5 | 30 |
| E-11 | *Q. agrifolia* | 13,8,7 | 30 |
| E-12 | *Q. agrifolia* | 6.5,7,5,5,2,3.5 | 35 |
| E-13 | *Q. agrifolia* | 20 | 40 |
| E-14 | *Q. agrifolia* | 30 | 45 |
| E-15 | *Q. agrifolia* | 6,8,3,4.5 | 20 |
| E-16 | *Q. agrifolia* | 1,1,3 | 15 |
| E-17 | *Q. agrifolia* | 1,2,2,2 | 10 |
| E-18 | *Q. agrifolia* | 35 | 45 |
| E-19 | *Q. agrifolia* | 14,4,4,3,3 | 35 |
| E-20 | *Q. agrifolia* | 12,12 | 30 |
| E-21 | *Q. agrifolia* | 6 | 25 |
| E-22 | *Q. berberdifolia* | 3.5 | 12 |
| E-23 | *Q. agrifolia* | 12 | 25 |
| E-24 | *Q. agrifolia* | 2,3,4 | 12 |
| E-25 | *Q. agrifolia* | 4,4 | 15 |
| E-26 | *Q. berberdifolia* | N/A | 6 |
| E-27 | *Q. berberdifolia* | N/A | 6 |
| E-28 | *Q. berberdifolia* | N/A | 6 |
| E-29 | *Q. berberdifolia* | N/A | 6 |
| E-30 | *Q. berberdifolia* | N/A | 6 |
| E-31 | *Q. berberdifolia* | N/A | 6 |
| E-32 | *Q. berberdifolia* | N/A | 6 |
| E-33 | *Q. berberdifolia* | N/A | 6 |
| E-34 | *Q. berberdifolia* | N/A | 6 |
| E-35 | *Q. berberdifolia* | N/A | 6 |
| E-36 | *Q. berberdifolia* | N/A | 6 |
| E-37 | *Q. berberdifolia* | N/A | 4 |
| E-38 | *Q. berberdifolia* | N/A | 4 |
| E-39 | *Q. berberdifolia* | N/A | 4 |
| E-40 | *Q. agrifolia* | 40,20 | 50 |
| E-41 | *Q. berberdifolia* | N/A | 10 |
| E-42 | *Q. agrifolia* | 7 | 15 |

| | | | |
|---|---|---|---|
| E-43 | *Q. agrifolia* | 2,3,4 | 12 |
| E-44 | *Q. berberdifolia* | N/A | 6-8 |
| E-45 | *Q. berberdifolia* | N/A | 6-8 |
| E-46 | *Q. berberdifolia* | N/A | 6-8 |
| E-47 | *Q. berberdifolia* | N/A | 6-8 |
| E-48 | *Q. berberdifolia* | N/A | 6-8 |
| E-49 | *Q. berberdifolia* | N/A | 6-8 |
| E-50 | *Q. berberdifolia* | N/A | 6-8 |
| E-51 | *Q. berberdifolia* | N/A | 4-6 |
| E-52 | *Q. berberdifolia* | N/A | 4-6 |
| E-53 | *Q. berberdifolia* | N/A | 4-6 |
| E-54 | *Q. berberdifolia* | N/A | 4-6 |
| E-55 | *Q. berberdifolia* | N/A | 4-6 |
| E-56 | *Q. berberdifolia* | N/A | 4-6 |
| E-57 | *Q. berberdifolia* | N/A | 4-6 |
| E-58 | *Q. berberdifolia* | N/A | 4-6 |
| E-59 | *Q. berberdifolia* | N/A | 4-6 |
| E-60 | *Q. berberdifolia* | N/A | 4-6 |
| E-61 | *Q. berberdifolia* | N/A | 4-6 |
| E-62 | *Q. berberdifolia* | N/A | 4-6 |
| E-63 | *Q. berberdifolia* | N/A | 4-6 |
| E-64 | *Q. berberdifolia* | N/A | 4-6 |
| E-65 | *Q. berberdifolia* | N/A | 4-6 |
| E-66 | *Q. berberdifolia* | N/A | 4-6 |
| E-67 | *Q. berberdifolia* | N/A | 4-6 |
| E-68 | *Q. berberdifolia* | N/A | 4-6 |
| E-69 | *Q. berberdifolia* | N/A | 4-6 |
| E-70 | *Q. berberdifolia* | N/A | 4-6 |
| E-71 | *Q. agrifolia* | 10,13 | 30 |
| E-72 | *Q. agrifolia* | 4,6 | 35 |
| E-73 | *Q. agrifolia* | 5,4,3 | 40 |
| E-74 | *Q. agrifolia* | 6.5,5,3 | 40 |
| E-75 | *Q. agrifolia* | 3.5,3 | 20 |
| E-76 | *Q. agrifolia* | 3,5 | 35 |
| E-77 | *Q. agrifolia* | 3 | 15 |
| E-78 | *Q. agrifolia* | 35 | 50 |
| E-79 | *Q. agrifolia* | 16,16 | 45 |
| E-80 | *Q. agrifolia* | 2,2,4,5,6,7 | 35 |
| E-81 | *Q. agrifolia* | 10,18,10,7 | 50 |
| E-82 | *Q. agrifolia* | 15,4,6,6,5,3,4,3 | 40 |
| E-83 | *Q. agrifolia* | 5,5,4,4,4,7 | 40 |
| E-84 | *Q. agrifolia* | 7,4,5,5,3,3,3 | 30 |
| E-85 | *Q. agrifolia* | 7,8,5,5 | 30 |

# APPENDIX B

# OAK TREE LOCATION MAPS


LEGEND

- Project Limits
- Coast Live Oak
- Scrub Oak

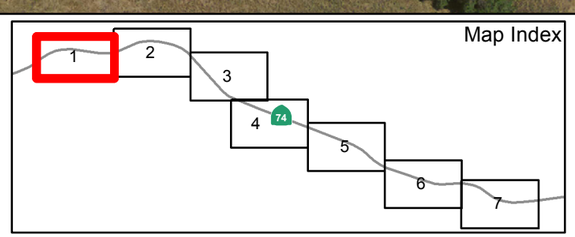
N

0 50 100
FEET

Note: Tree ID's ending with lower case letters indicate trees which were surveyed using aerial photography only.

SOURCE: Eagle Aerial (4/2011); LSA (2012)

I:\CDT1103\SR74 Pavement Rehabilitation\GIS\Oak_Canopies.mxd (11/5/2012)




APPENDIX B
Sheet 1 of 7

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Oak Tree Locations
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

LEGEND

- Project Limits
- Coast Live Oak
- Scrub Oak

Note: Tree ID's ending with lower case letters indicate trees which were surveyed using aerial photography only.

0 50 100
FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012)

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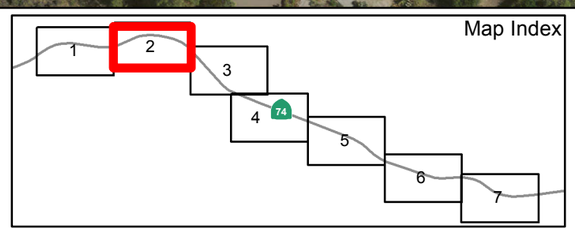


APPENDIX B
Sheet 2 of 7

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Oak Tree Locations
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

LEGEND

- Project Limits
- Coast Live Oak
- Scrub Oak

0 50 100
FEET

Note: Tree ID's ending with lower case letters indicate trees which were surveyed using aerial photography only.

SOURCE: Eagle Aerial (4/2011); LSA (2012)

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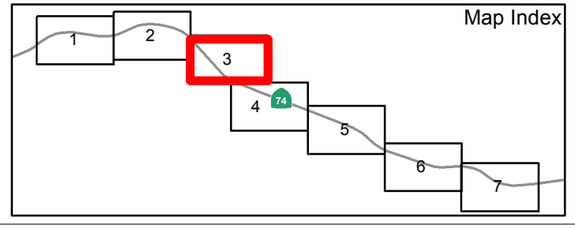


APPENDIX B
Sheet 3 of 7

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Oak Tree Locations
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180


LEGEND

- Project Limits
- Coast Live Oak
- Scrub Oak

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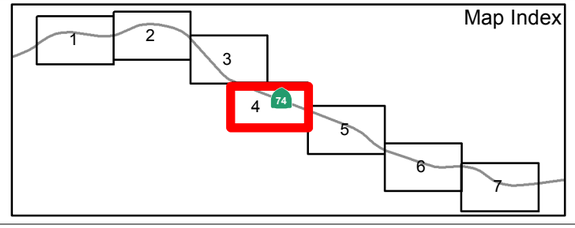



APPENDIX B
Sheet 4 of 7

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Oak Tree Locations
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

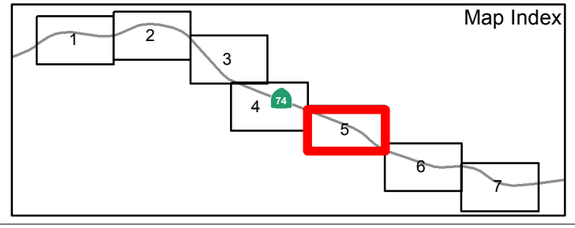

LEGEND

- Project Limits
- Coast Live Oak
- Scrub Oak

0 50 100
FEET

Note: Tree ID's ending with lower case letters indicate trees which were surveyed using aerial photography only.

SOURCE: Eagle Aerial (4/2011); LSA (2012)




APPENDIX B
Sheet 5 of 7

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Oak Tree Locations
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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LEGEND

- Project Limits
- Coast Live Oak
- Scrub Oak

N

0 50 100
FEET

Note: Tree ID's ending with lower case letters indicate trees which were surveyed using aerial photography only.

SOURCE: Eagle Aerial (4/2011); LSA (2012)

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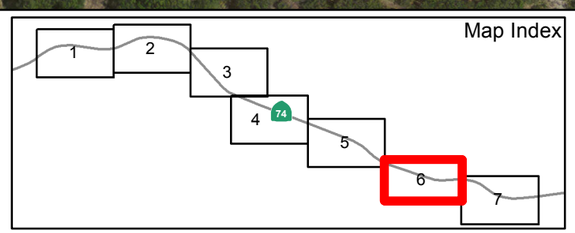
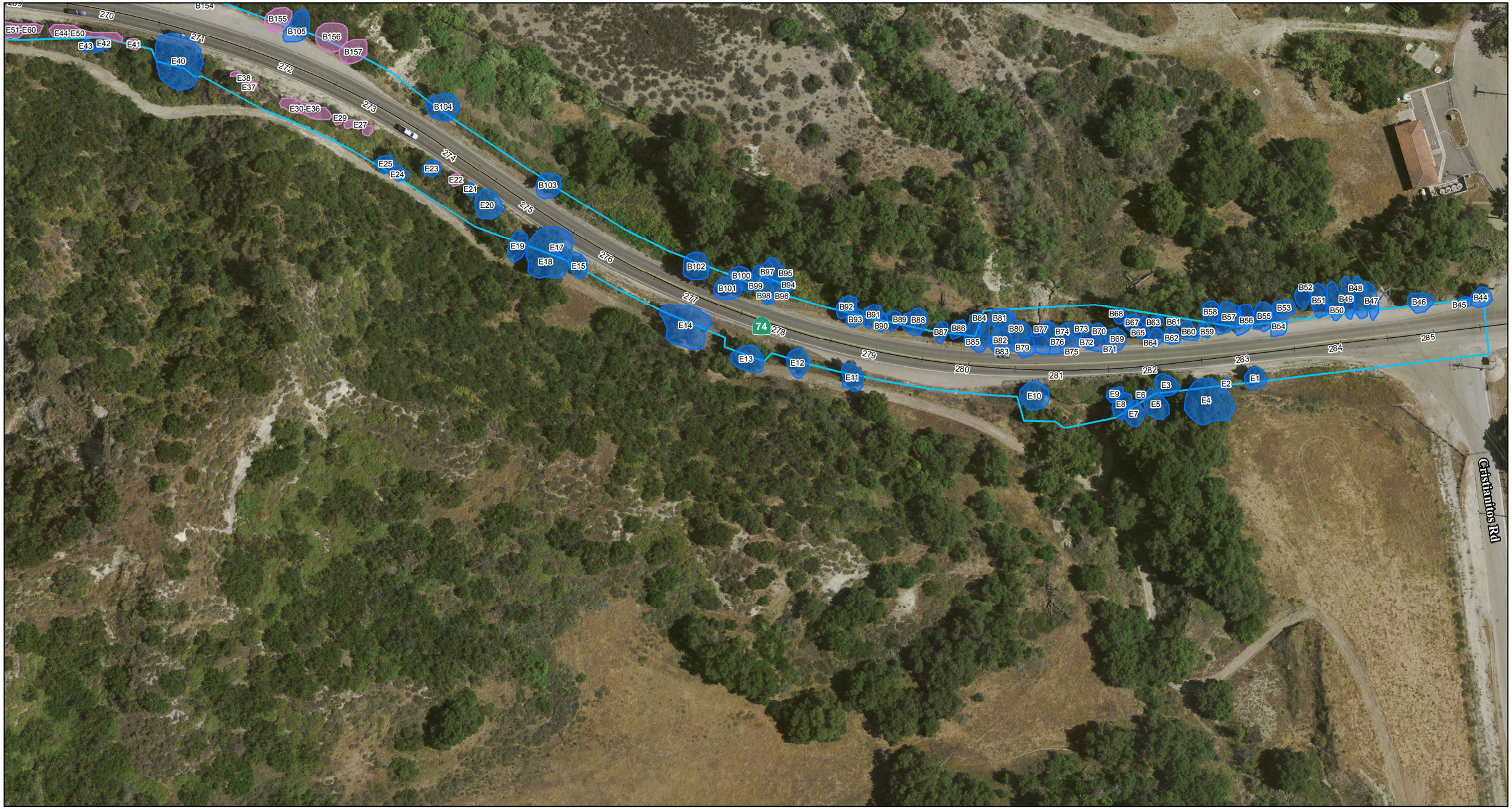



APPENDIX B
Sheet 6 of 7

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Oak Tree Locations

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180




LEGEND

- Project Limits
- Coast Live Oak
- Scrub Oak

N

0 50 100
FEET

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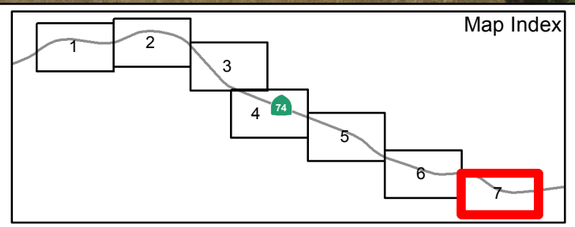
SOURCE: Eagle Aerial (4/2011); LSA (2012)




APPENDIX B
Sheet 7 of 7

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Oak Tree Locations
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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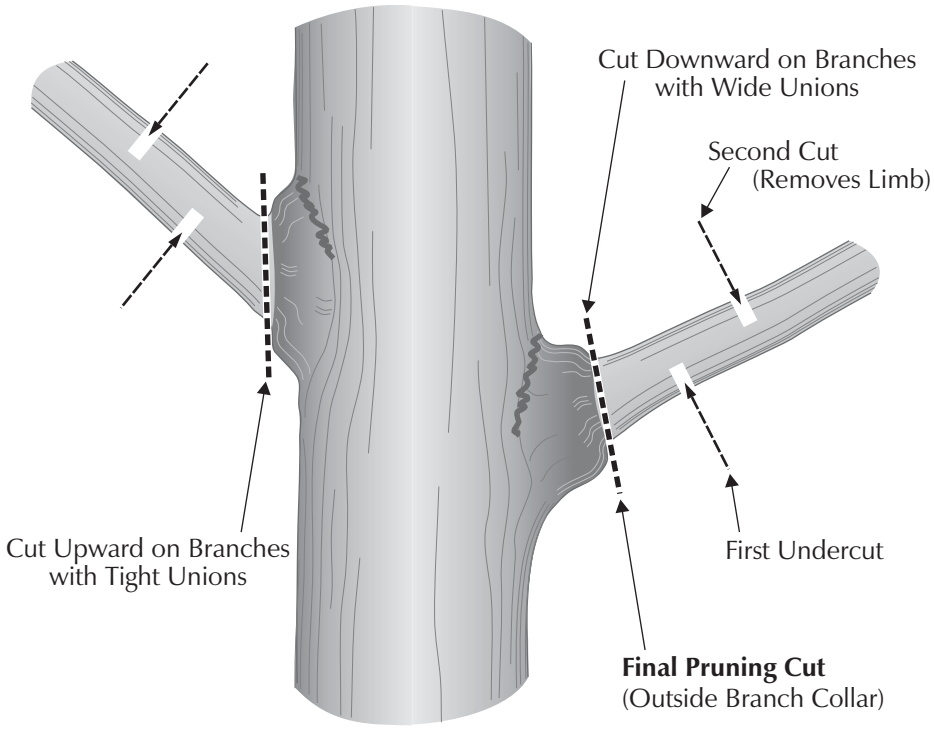
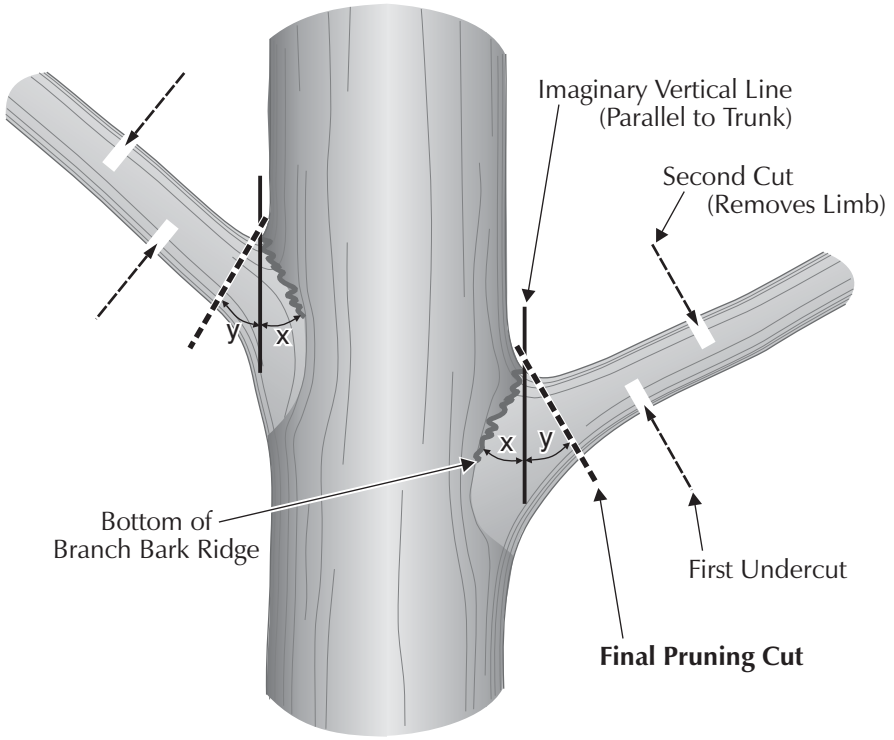
# APPENDIX C

# PROPER PRUNING PRACTICES




**DISTINCT**
**BRANCH COLLAR**




Angle "y" Should be Greater than or Equal to Angle "x"

**INDISTINCT**
**BRANCH COLLAR**

LSA

Tree Pruning Detail

**ANSI®**
**A300 (Part 1)-2001**
**Revision of**
**ANSI A300-1995**

American National Standard
for Tree Care Operations –

# Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices *(Pruning)*

Secretariat

**National Arborist Association, Inc.**

Approved May 22, 2001

**American National Standards Institute, Inc.**
Headquarters:
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Washington, DC 20036
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New York, NY 10036

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## Contents

## Forward (This foreword is not part of American National Standard A300 Part 1-2001.)

An industry-consensus standard must have the input of the industry that it is intended to affect. The Accredited Standards Committee A300 was approved June 28, 1991. The committee includes representatives from the residential and commercial tree care industry, the utility, municipal, and federal sectors, the landscape and nursery industries, and other interested organizations. Representatives from varied geographic areas with broad knowledge and technical expertise contributed.

The A300 standard can be best placed in proper context if one reads its *Scope*, *Purpose*, and *Application*. This document presents performance standards for the care and maintenance of trees, shrubs, and other woody plants. It is intended as a guide in the drafting of maintenance specifications for federal, state, municipal, and private authorities including property owners, property managers, and utilities.

The A300 standard stipulates that specifications for tree work should be written and administered by a professional possessing the technical competence to provide for, or supervise, the management of woody landscape plants. Users of this standard must first interpret its wording, then apply their knowledge of growth habits of certain plant species in a given environment. In this manner, the user ultimately develops their own specifications for plant maintenance.

ANSI A300 Part 1 – *Pruning,* should be used in conjunction with the rest of the A300 standard when writing specifications for tree care operations.

Suggestions for improvement of this standard should be forwarded to: NAA300 Secretary, c/o National Arborist Association, 3 Perimeter Rd. - Unit 1, Manchester, NH 03103, USA or Email: naa@natlarb.com.

This standard was processed and approved for submittal to ANSI by Accredited Standards Committee on Tree, Shrub, and Other Woody Plant Maintenance Operations – *Standard Practices,* A300. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the A300 committee had the following members:

Tim Johnson, Chair (Artistic Arborist, Inc.)

Bob Rouse, Secretary (National Arborist Association, Inc.)

| *Organizations Represented* | *Name of Representative* |
|---|---|
| American Forests | Staff (Observer) |
| American Nursery and Landscape Association | Craig J. Regelbrugge |
| American Society of Consulting Arborists | Andrew Graham |
| | Donald Blair (Adviser) |
| | Beth Palys (Adviser) |
| American Society of Landscape Architects | Ron Leighton |
| Asplundh Tree Expert Company | Geoff Kempter |
| Associated Landscape Contractors of America | Preston Leyshon |
| | Jeff Bourne (Alt.) |
| The Davey Tree Expert Company | Joseph Tommasi |
| | Dick Jones (Alt.) |
| | Richard Rathjens (Adviser) |
| The F.A. Bartlett Tree Expert Company | Peter Becker |
| | Dr. Thomas Smiley (Alt.) |
| International Society of Arboriculture | Ed Brennan |
| | Sharon Lilly (Alt.) |
| National Arborist Association | Ronald Rubin |
| | Tom Mugridge (Alt.) |
| National Park Service | Robert DeFeo |
| Professional Grounds Management Society | Kevin O'Donnell |
| Society of Municipal Arborists | Andrew Hillman |
| U.S. Forest Service | Ed Macie |
| | Mike Galvin (Alt.) |
| | Philip D. Rodbell (Alt.) |

# American National Standard for Tree Care Operations –

# Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices *(Pruning)*

## 1 ANSI A300 standards

### 1.1 Scope

ANSI A300 standards present performance standards for the care and maintenance of trees, shrubs, and other woody plants.

### 1.2 Purpose

ANSI A300 standards are intended as guides for federal, state, municipal and private authorities including property owners, property managers, and utilities in the drafting of their maintenance specifications.

### 1.3 Application

ANSI A300 standards shall apply to any person or entity engaged in the business, trade, or performance of repairing, maintaining, or preserving trees, shrubs, or other woody plants.

### 1.4 Implementation

Specifications for tree maintenance should be written and administered by an arborist.

## 2 Part 1 – Pruning standards

### 2.1 Purpose

The purpose of this document is to provide standards for developing specifications for tree pruning.

### 2.2 Reasons for pruning

The reasons for tree pruning may include, but are not limited to, reducing risk, maintaining or improving tree health and structure, improving aesthetics, or satisfying a specific need. Pruning practices for agricultural, horticultural production, or silvicultural purposes are exempt from this standard.

### 2.3 Safety

**2.3.1** Tree maintenance shall be performed only by arborists or arborist trainees who, through related training or on-the-job experience, or both, are familiar with the practices and hazards of arboriculture and the equipment used in such operations.

**2.3.2** This standard shall not take precedence over arboricultural safe work practices.

**2.3.3** Operations shall comply with applicable Occupational Safety and Health Administration (OSHA) standards, ANSI Z133.1, as well as state and local regulations.

## 3 Normative references

The following standards contain provisions, which, through reference in the text, constitute provisions of this American National Standard. All standards are subject to revision, and parties to agreements based on this American National Standard shall apply the most recent edition of the standards indicated below.

ANSI Z60.1, *Nursery stock*

ANSI Z133.1, *Tree care operations - Pruning, trimming, repairing, maintaining, and removing trees, and cutting brush - Safety requirements*

29 CFR 1910, General industry [1)]

29 CFR 1910.268, Telecommunications [1)]

29 CFR 1910.269, Electric power generation, transmission, and distribution [1)]

29 CFR 1910.331 - 335, Electrical safety-related work practices [1)]

## 4 Definitions

**4.1 anvil-type pruning tool:** A pruning tool that

branches. Lion's tailing is not an acceptable pruning practice (5.5.7).

**4.28 mechanical pruning:** A utility pruning technique where large-scale power equipment is used to cut back branches (5.9.2.2).

**4.29 parent branch or stem:** A tree trunk, limb, or prominent branch from which shoots or stems grow.

**4.30 peeling:** *For palms:* The removal of only the dead frond bases at the point they make contact with the trunk without damaging living trunk tissue. (syn.: shaving)

**4.31 petiole:** A stalk of a leaf or frond.

**4.32 phloem:** Inner bark conducting tissues that transport organic substances, primarily carbohydrates, from leaves and stems to other parts of the plant.

**4.33 pollarding:** The maintenance of a tree by making internodal cuts to reduce the size of a young tree, followed by the annual removal of shoot growth at its point of origin (5.7.3).

**4.34 pruning:** The selective removal of plant parts to meet specific goals and objectives.

**4.35 qualified line-clearance arborist:** An individual who, through related training and on-the-job experience, is familiar with the equipment and hazards in line clearance and has demonstrated the ability to perform the special techniques involved. This individual may or may not be currently employed by a line-clearance contractor.

**4.36 qualified line-clearance arborist trainee:** An individual undergoing line-clearance training and who, in the course of such training, is familiar with the hazards and equipment involved in line clearance and has demonstrated ability in the performance of the special techniques involved. This individual shall be under the direct supervision of a qualified line-clearance arborist.

**4.37 raising:** Selective pruning to provide vertical clearance (5.6.3).

**4.38 reduction:** Selective pruning to decrease height and/or spread (5.6.4).

**4.39 remote/rural areas:** Locations associated with very little human activity, land improvement, or development.

**4.40 restoration:** Selective pruning to improve the structure, form, and appearance of trees that have been severely headed, vandalized, or damaged (5.7.4).

**4.41 shall:** As used in this standard, denotes a mandatory requirement.

**4.42 should:** As used in this standard, denotes an advisory recommendation.

**4.43 stub:** An undesirable short length of a branch remaining after a break or incorrect pruning cut is made.

**4.44 thinning:** Selective pruning to reduce density of live branches (5.6.2).

**4.45 throwline:** A small, lightweight line with a weighted end used to position a climber's rope in a tree.

**4.46 topping:** The reduction of a tree's size using heading cuts that shorten limbs or branches back to a predetermined crown limit. Topping is not an acceptable pruning practice (5.5.7).

**4.47 tracing:** The removal of loose, damaged tissue from in and around the wound.

**4.48 urban/residential areas:** Locations, such as populated areas including public and private property, that are normally associated with human activity.

**4.49 utility:** An entity that delivers a public service, such as electricity or communications.

**4.50 utility space:** The physical area occupied by a utility's facilities and the additional space required to ensure its operation.

**4.51 vista pruning:** Selective pruning to allow a specific view (5.7.5).

**4.52 watersprouts:** New stems originating from epicormic buds. (syn.: epicormic shoots)

**4.53 wound:** An opening that is created when the bark of a live branch or stem is penetrated, cut, or removed.

has a sharp straight blade that cuts against a flat metal cutting surface, in contrast to a *hook-and-blade-type pruning tool* (4.21).

**4.2 apical dominance:** Inhibition of growth of lateral buds by the terminal bud.

**4.3 arboriculture:** The art, science, technology, and business of commercial, public, and utility tree care.

**4.4 arborist:** An individual engaged in the profession of arboriculture who, through experience, education, and related training, possesses the competence to provide for or supervise the management of trees and other woody plants.

**4.5 arborist trainee:** An individual undergoing on-the-job training to obtain the experience and the competence required to provide for or supervise the management of trees and other woody plants. Such trainees shall be under the direct supervision of an arborist.

**4.6 branch bark ridge:** The raised area of bark in the branch crotch that marks where the branch and parent meet.

**4.7 branch collar:** The swollen area at the base of a branch.

**4.8 callus:** Undifferentiated tissue formed by the cambium around a wound.

**4.9 cambium:** The dividing layer of cells that forms sapwood (xylem) to the inside and inner bark (phloem) to the outside.

**4.10 cleaning:** Selective pruning to remove one or more of the following parts: dead, diseased, and/or broken branches (5.6.1).

**4.11 climbing spurs:** Sharp, pointed devices affixed to a climber's boot used to assist in climbing trees. (syn.: gaffs, hooks, spurs, spikes, climbers)

**4.12 closure:** The process of woundwood covering a cut or other tree injury.

**4.13 crown:** The leaves and branches of a tree measured from the lowest branch on the trunk to the top of the tree.

**4.14 decay:** The degradation of woody tissue caused by microorganisms.

**4.15 espalier:** The combination of pruning, supporting, and training branches to orient a plant in one plane (5.7.2).

**4.16 establishment:** The point after planting when a tree's root system has grown sufficiently into the surrounding soil to support shoot growth and anchor the tree.

**4.17 facility:** A structure or equipment used to deliver or provide protection for the delivery of an essential service, such as electricity or communications.

**4.18 final cut:** A cut that completes the removal or reduction of a branch or stub.

**4.19 frond:** A leaf of a palm.

**4.20 heading:** 1. Cutting a currently growing, or a 1-year-old shoot, back to a bud. 2. Cutting an older branch or stem back to a stub in order to meet a defined structural objective. 3. Cutting an older branch or stem back to a lateral branch not large enough to assume apical dominance in order to meet a defined structural objective. Heading may or may not be an acceptable pruning practice, depending on the application.

**4.21 hook-and-blade-type pruning tool:** A pruning tool that has a sharp curved blade that overlaps a supporting hook; in contrast to an *anvil-type pruning tool* (4.1). (syn.: by-pass pruner)

**4.22 interfering branches:** Crossing, rubbing, or upright branches that have the potential to damage tree structure and/or health.

**4.23 internodal cut:** A cut located between lateral branches or buds.

**4.24 lateral branch:** A shoot or stem growing from a parent branch or stem.

**4.25 leader:** A dominant or co-dominant, upright stem.

**4.26 limb:** A large, prominent branch.

**4.27 lion's tailing:** The removal of an excessive number of inner, lateral branches from parent

**4.54 woundwood:** Partially differentiated tissue responsible for closing wounds. Woundwood develops from callus associated with wounds.

**4.55 xylem:** Wood tissue. Active xylem is sapwood; inactive xylem is heartwood.

**4.56 young tree:** A tree young in age or a newly transplanted tree.

## 5 Pruning practices

### 5.1 Tree inspection

**5.1.1** An arborist or arborist trainee shall visually inspect each tree before beginning work.

**5.1.2** If a condition is observed requiring attention beyond the original scope of the work, the condition should be reported to an immediate supervisor, the owner, or the person responsible for authorizing the work.

### 5.2 Tools and equipment

**5.2.1** Equipment and work practices that damage living tissue and bark beyond the scope of the work should be avoided.

**5.2.2** Climbing spurs shall not be used when climbing and pruning trees.

Exceptions:
- when limbs are more than throwline distance apart and there is no other means of climbing the tree;
- when the bark is thick enough to prevent damage to the cambium;
- in remote or rural utility rights-of-way.

### 5.3 Pruning cuts

**5.3.1** Pruning tools used in making pruning cuts shall be sharp.

**5.3.2** A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub (see Figure 5.3.2).

**5.3.3** A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem (see Figure 5.3.3).

**5.3.4** The final cut shall result in a flat surface with adjacent bark firmly attached.

**5.3.5** When removing a dead branch, the final cut shall be made just outside the collar of living tissue.

**5.3.6** Tree branches shall be removed in such a manner so as not to cause damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark (see Figure 5.3.2). Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground.

**5.3.7** A final cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent limb (see Figure 5.3.7).

**5.3.8** Severed limbs shall be removed from the crown upon completion of the pruning, at times when the tree would be left unattended, or at the end of the workday.

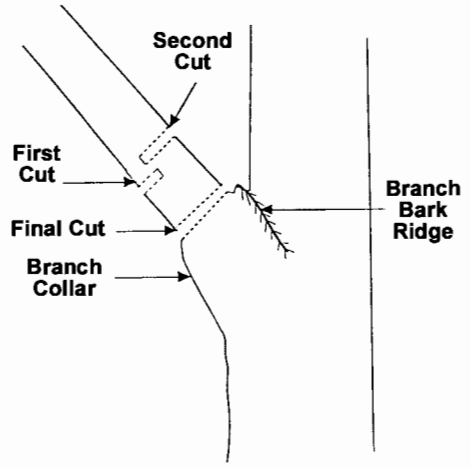


**Figure 5.3.2. – A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark.**

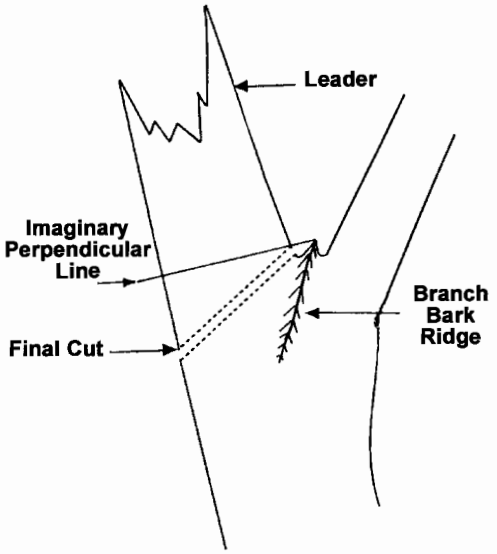


**Figure 5.3.3. – A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem.**

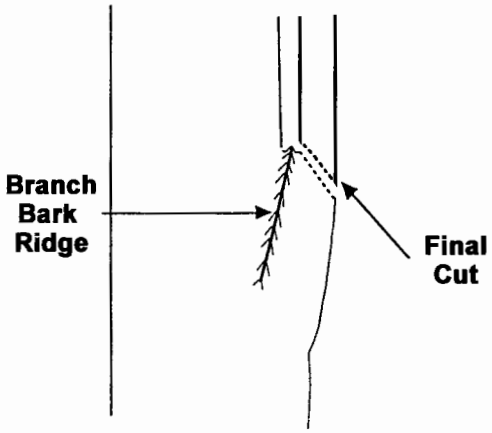


**Figure 5.3.7. – A final cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent limb.**

## 5.4 Wound treatment

**5.4.1** Wound treatments should not be used to cover wounds or pruning cuts, except when recommended for disease, insect, mistletoe, or sprout control, or for cosmetic reasons.

**5.4.2** Wound treatments that are damaging to tree tissues shall not be used.

**5.4.3** When tracing wounds, only loose, damaged tissue should be removed.

## 5.5 Pruning objectives

**5.5.1** Pruning objectives shall be established prior to beginning any pruning operation.

**5.5.2** To obtain the defined objective, the growth cycles and structure of individual species and the type of pruning to be performed should be considered.

**5.5.3** Not more than 25 percent of the foliage should be removed within an annual growing season. The percentage and distribution of foliage to be removed shall be adjusted according to the plant's species, age, health, and site.

**5.5.4** Not more than 25 percent of the foliage of a branch or limb should be removed when it is cut back to a lateral. That lateral should be large enough to assume apical dominance.

**5.5.5** Pruning cuts should be made in accordance with 5.3 *Pruning cuts.*

**5.5.6** Heading should be considered an acceptable practice for shrub or specialty pruning when needed to reach a defined objective.

**5.5.7** Topping and lion's tailing shall be considered unacceptable pruning practices for trees.

## 5.6 Pruning types

Specifications for pruning should consist of, but are not limited to, one or more of the following types:

**5.6.1 Clean:** Cleaning shall consist of selective pruning to remove one or more of the following parts: dead, diseased, and/or broken branches.

**5.6.1.1** Location of parts to be removed shall be specified.

**5.6.1.2** Size range of parts to be removed shall be specified.

**5.6.2 Thin:** Thinning shall consist of selective pruning to reduce density of live branches.

**5.6.2.1** Thinning should result in an even distribution of branches on individual limbs and throughout the crown.

**5.6.2.2** Not more than 25 percent of the crown should be removed within an annual growing season.

**5.6.2.3** Location of parts to be removed shall be specified.

**5.6.2.4** Percentage of foliage and size range of parts to be removed shall be specified.

**5.6.3 Raise:** Raising shall consist of selective pruning to provide vertical clearance.

**5.6.3.1** Vertical clearance should be specified.

**5.6.3.2** Location and size range of parts to be removed should be specified.

**5.6.4 Reduce:** Reduction shall consist of selective pruning to decrease height and/or spread.

**5.6.4.1** Consideration shall be given to the ability of a species to tolerate this type of pruning.

**5.6.4.2** Location of parts to be removed and clearance should be specified.

**5.6.4.3** Size range of parts should be specified.

### 5.7 Specialty pruning

Consideration shall be given to the ability of a species to tolerate specialty pruning, using one or more pruning types (5.6).

### 5.7.1 Young trees

**5.7.1.1** The reasons for young tree pruning may include, but are not limited to, reducing risk, maintaining or improving tree health and structure, improving aesthetics, or satisfying a specific need.

**5.7.1.2** Young trees that will not tolerate repetitive pruning and have the potential to outgrow their space should be considered for relocation or removal.

#### 5.7.1.3 At planting

**5.7.1.3.1** Pruning should be limited to cleaning (5.6.1).

**5.7.1.3.2** Branches should be retained on the lower trunk.

#### 5.7.1.4 Once established

**5.7.1.4.1** Cleaning should be performed (5.6.1).

**5.7.1.4.2** Rubbing and poorly attached branches should be removed.

**5.7.1.4.3** A central leader or leader(s) as appropriate should be developed.

**5.7.1.4.4** A strong, properly spaced scaffold branch structure should be selected and maintained.

**5.7.1.4.5** Interfering branches should be reduced or removed.

### 5.7.2 Espalier

**5.7.2.1** Branches that extend outside the desired plane of growth shall be pruned or tied back.

**5.7.2.2** Ties should be replaced as needed to prevent girdling the branches at the attachment site.

### 5.7.3 Pollarding

**5.7.3.1** Consideration shall be given to the ability of the individual tree to respond to pollarding.

**5.7.3.2** Management plans shall be made prior to the start of the pollarding process for routine removal of watersprouts.

**5.7.3.3** Internodal cuts shall be made at specific locations to start the pollarding process. After the initial cuts are made, no additional internodal cut shall be made.

**5.7.3.4** Watersprouts growing from the cut ends of branches (knuckles) should be removed annually during the dormant season.

### 5.7.4 Restoration

**5.7.4.1** Restoration shall consist of selective pruning to improve the structure, form, and appearance of trees that have been severely headed, vandalized, or damaged.

**5.7.4.2** Location in tree, size range of parts, and percentage of watersprouts to be removed should be specified.

### 5.7.5 Vista pruning

**5.7.5.1** Vista pruning shall consist of selective pruning to allow a specific view.

**5.7.5.2** Size range of parts, location in tree, and percentage of foliage to be removed should be specified.

## 5.8 Palm pruning

**5.8.1** Palm pruning should be performed when fronds, fruit, or loose petioles may create a dangerous condition.

**5.8.2** Live healthy fronds, initiating at an angle of 45 degrees or greater from horizontal, with frond tips at or below horizontal, should not be removed.

**5.8.3** Fronds removed should be severed close to the petiole base without damaging living trunk tissue.

**5.8.4** Palm peeling (shaving) should consist of the removal of only the dead frond bases at the point they make contact with the trunk without damaging living trunk tissue.

## 5.9 Utility pruning

### 5.9.1 General

**5.9.1.1** The purpose of utility pruning is to prevent the loss of service, comply with mandated clearance laws, prevent damage to equipment, avoid access impairment, and uphold the intended usage of the facility/utility space.

**5.9.1.2** Only a qualified line clearance arborist or line clearance arborist trainee shall be assigned to line clearance work in accordance with ANSI Z133.1, 29 CFR 1910.331 – 335, 29 CFR 1910.268 or 29 CFR 1910.269.

**5.9.1.3** Utility pruning operations are exempt from requirements in 5.1 Tree Inspection:

***5.1.1*** *An arborist or arborist trainee shall visually inspect each tree before beginning work.*

***5.1.2*** *If a condition is observed requiring attention beyond the original scope of the work, the condition should be reported to an immediate supervisor, the owner, or the person responsible for authorizing the work.*

**5.9.1.4** Safety inspections of the work area are required as outlined in ANSI Z133.1 4.1.3, *job briefing.*

### 5.9.2 Utility crown reduction pruning

#### 5.9.2.1 Urban/residential environment

**5.9.2.1.1** Pruning cuts should be made in accordance with 5.3, Pruning cuts. The following requirements and recommendations of 5.9.2.1.1 are repeated from 5.3 Pruning cuts.

**5.9.2.1.1.1** A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub (see Figure 5.3.2).

**5.9.2.1.1.2** A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem (see Figure 5.3.3).

**5.9.2.1.1.3** The final cut shall result in a flat surface with adjacent bark firmly attached.

**5.9.2.1.1.4** When removing a dead branch, the final cut shall be made just outside the collar of living tissue.

**5.9.2.1.1.5** Tree branches shall be removed in such a manner so as not to cause damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark (see Figure 5.3.2). Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground.

**5.9.2.1.1.6** A final cut that removes a branch

with a narrow angle of attachment should be made from the bottom of the branch to prevent damage to the parent limb (see Figure 5.3.7).

**5.9.2.1.2** A minimum number of pruning cuts should be made to accomplish the purpose of facility/utility pruning. The natural structure of the tree should be considered.

**5.9.2.1.3** Trees directly under and growing into facility/utility spaces should be removed or pruned. Such pruning should be done by removing entire branches or by removing branches that have laterals growing into (or once pruned, will grow into) the facility/utility space.

**5.9.2.1.4** Trees growing next to, and into or toward facility/utility spaces should be pruned by reducing branches to laterals (5.3.3) to direct growth away from the utility space or by removing entire branches. Branches that, when cut, will produce watersprouts that would grow into facilities and/or utility space should be removed.

**5.9.2.1.5** Branches should be cut to laterals or the parent branch and not at a pre-established clearing limit. If clearance limits are established, pruning cuts should be made at laterals or parent branches outside the specified clearance zone.

### 5.9.2.2 Rural/remote locations – mechanical pruning

Cuts should be made close to the main stem, outside of the branch bark ridge and branch collar. Precautions should be taken to avoid stripping or tearing of bark or excessive wounding.

### 5.9.3 Emergency service restoration

During a utility-declared emergency, service must be restored as quickly as possible in accordance with ANSI Z133.1, 29 CFR 1910.331 – 335, 29 CFR 1910.268, or 29 CFR 1910.269. At such times it may be necessary, because of safety and the urgency of service restoration, to deviate from the use of proper pruning techniques as defined in this standard. Following the emergency, corrective pruning should be done as necessary.

# Appendix J Vegetation Communities Map

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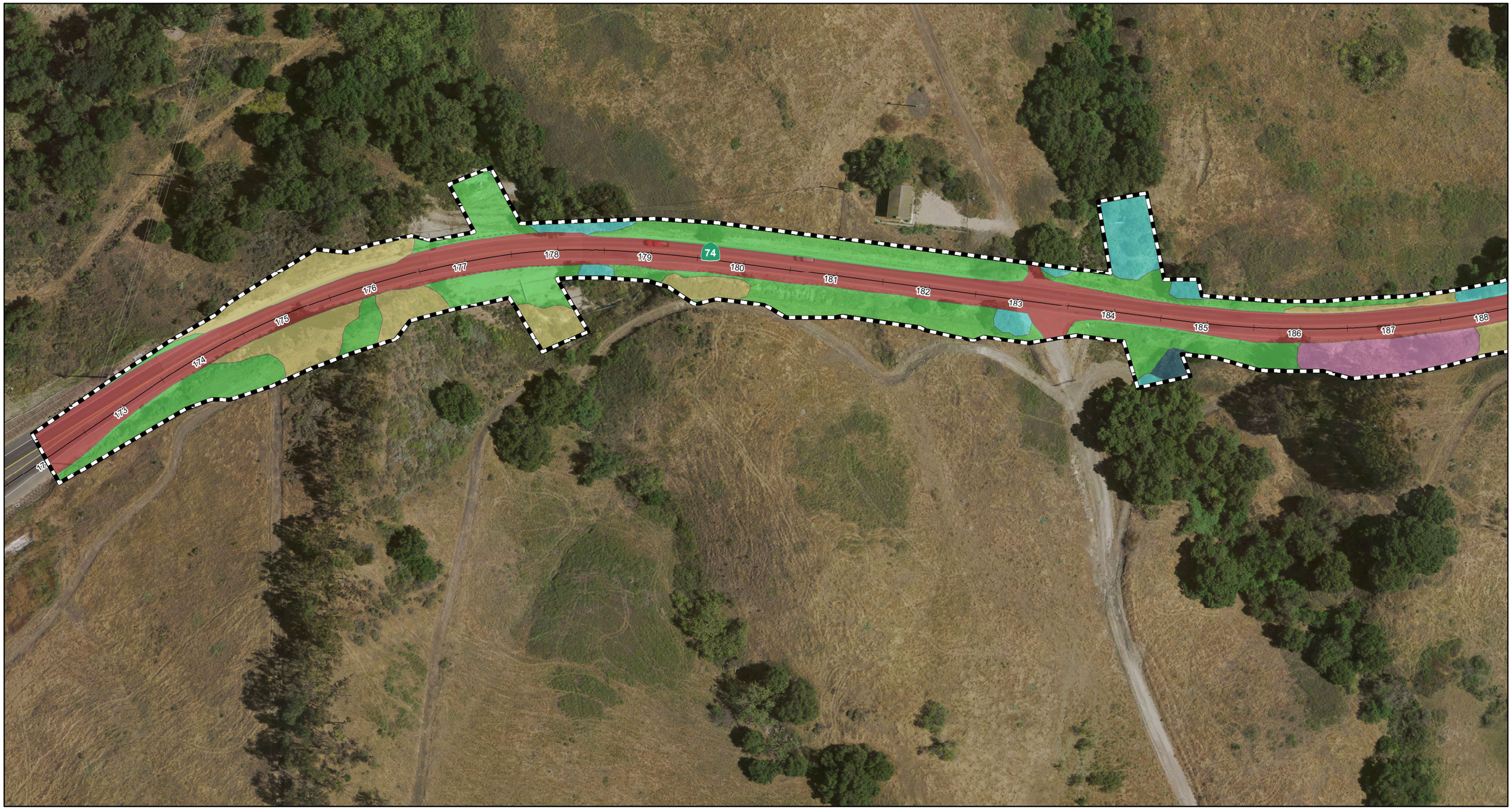


LEGEND

Project Limits/Biological Study Area (BSA)

Vegetation

- Chaparral (0.75 ac)
- Coast Live Oak Woodland (6.36 ac)
- Coastal Sage Scrub (2.20 ac)
- Non-native Grassland (2.39 ac)
- Ornamental Trees (0.16 ac)
- Southern Cottonwood-Willow Riparian Forest (0.03 ac)
- Developed Areas and Bare Ground (9.10 ac)

N

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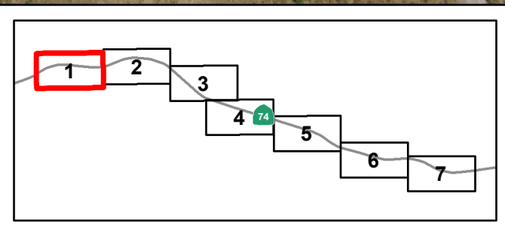


SOURCE: Eagle Aerial (4/2011); LSA (2012)

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APPENDIX J

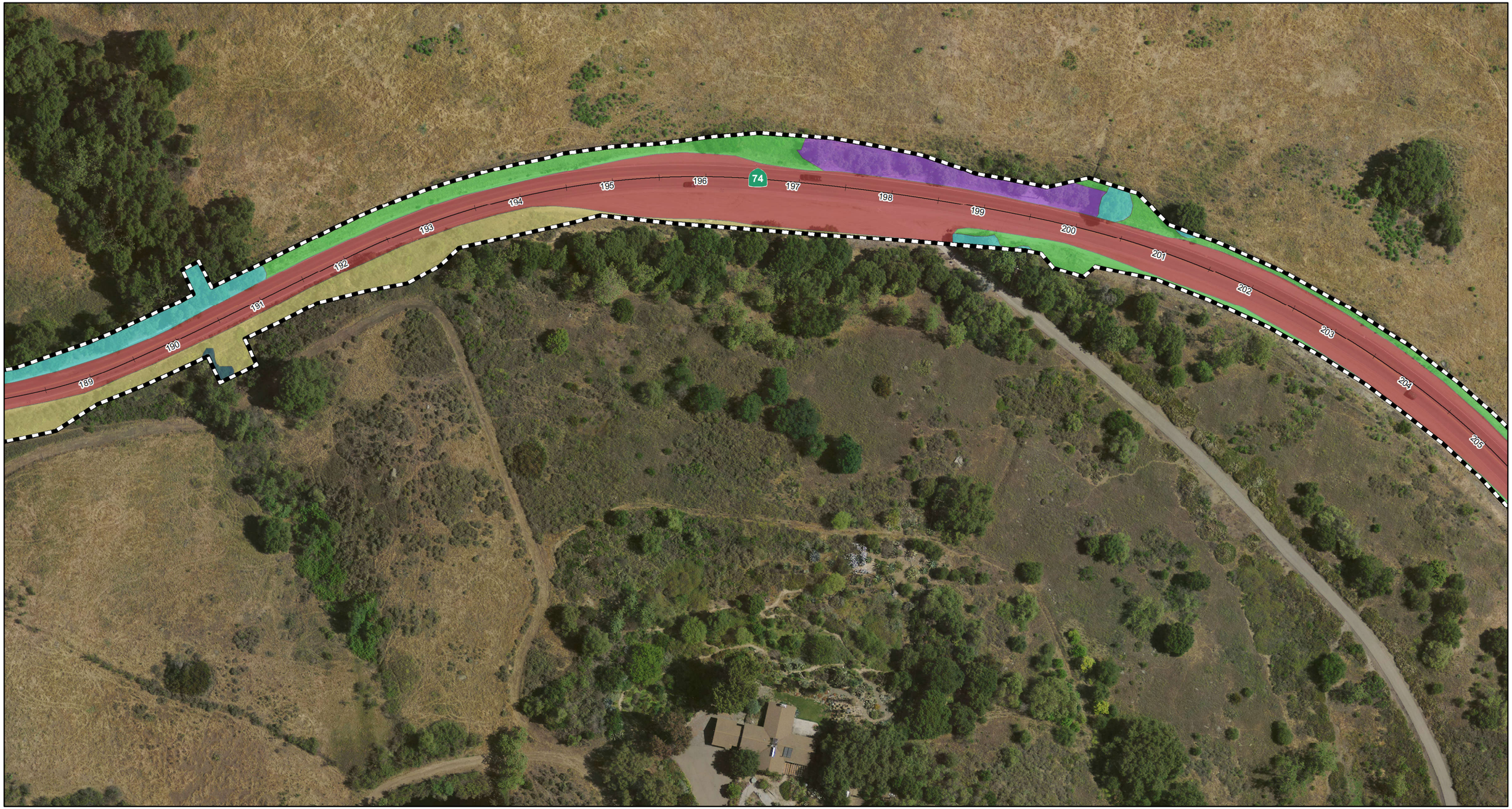
Sheet 1 of 7

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Communities Map

12-ORA-74 PM 2.93/5.06

EA 0L7200; Project No. 1200020180

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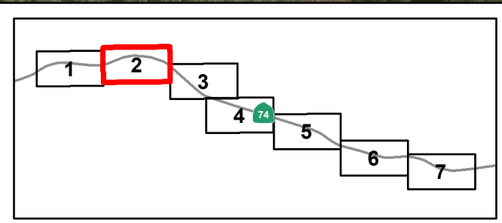


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APPENDIX J

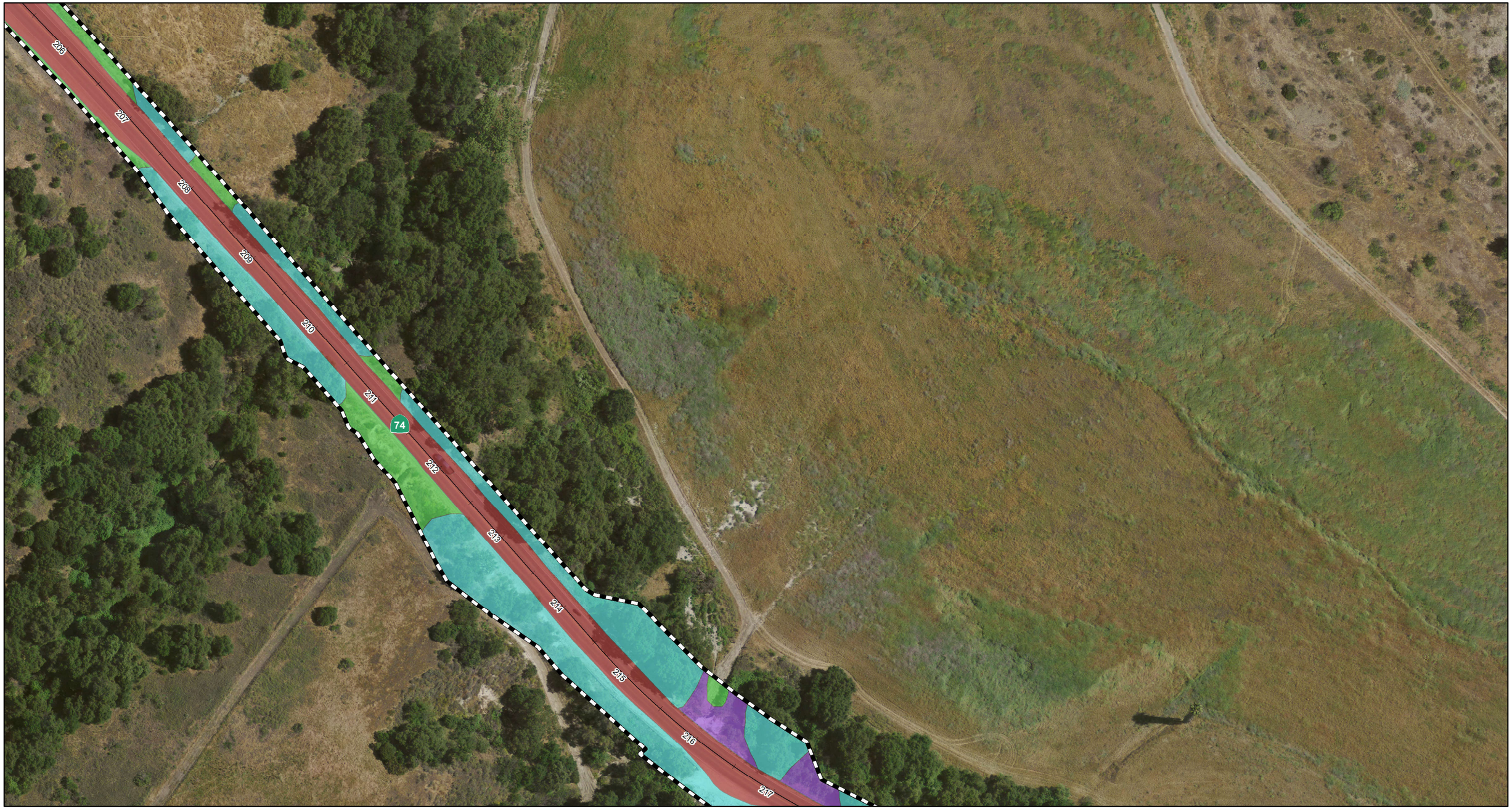
Sheet 2 of 7

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Communities Map

12-ORA-74 PM 2.93/5.06

EA 0L7200; Project No. 1200020180

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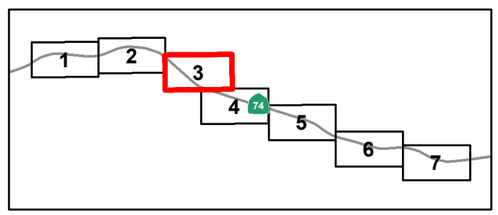


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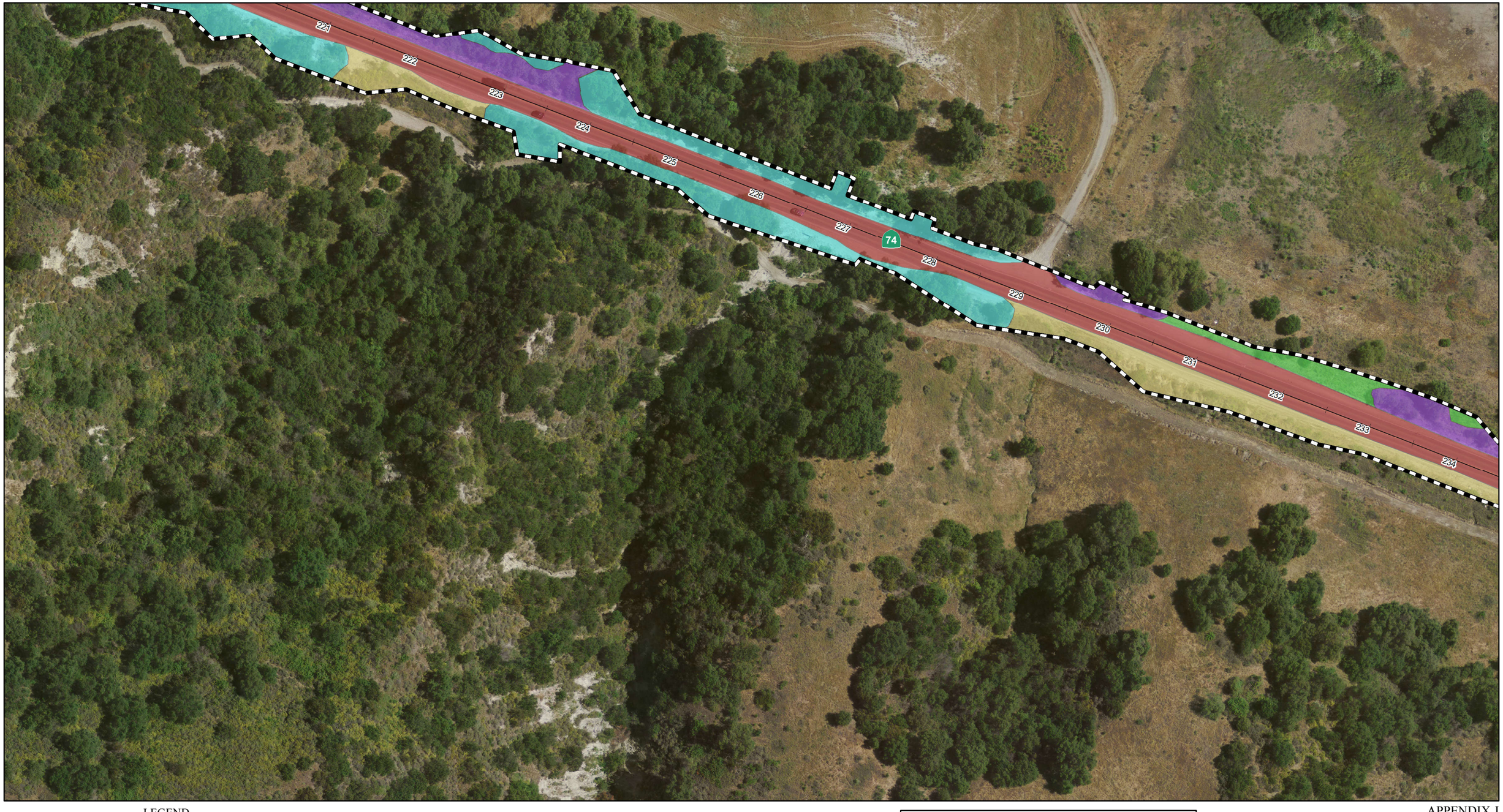
APPENDIX J

Sheet 3 of 7

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Communities Map

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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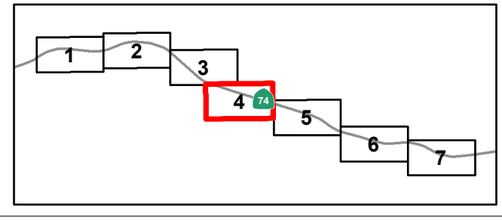


APPENDIX J

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*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Communities Map

12-ORA-74 PM 2.93/5.06

EA 0L7200; Project No. 1200020180

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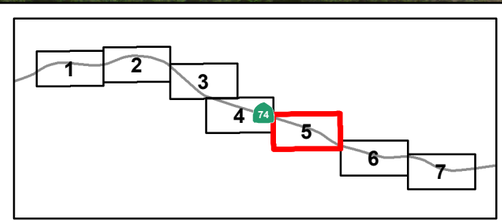


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APPENDIX J



*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Communities Map

12-ORA-74 PM 2.93/5.06

EA 0L7200; Project No. 1200020180


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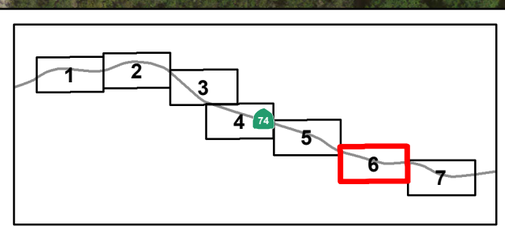


APPENDIX J
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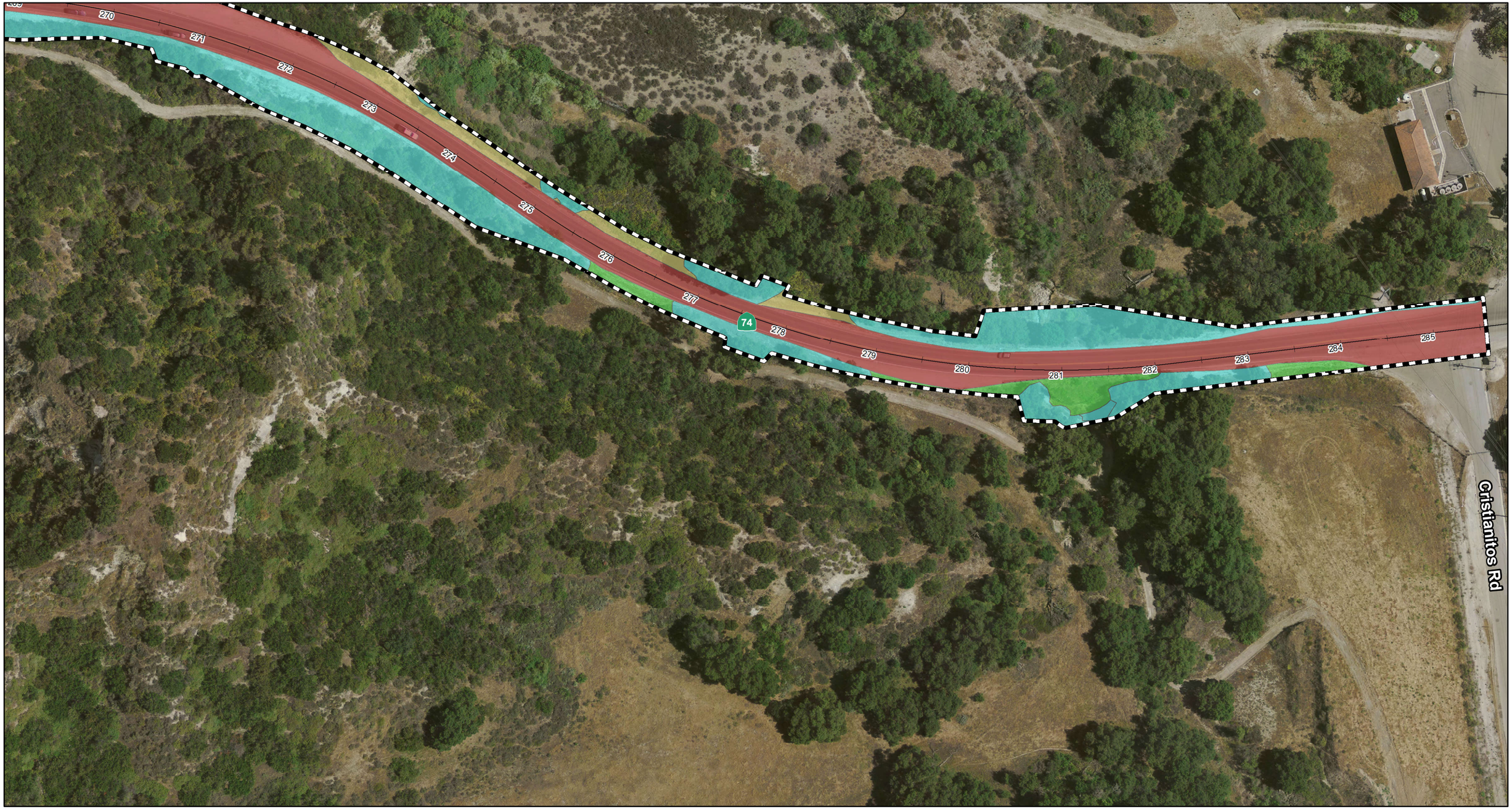
*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Communities Map

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180




LEGEND

Project Limits/Biological Study Area (BSA)

Vegetation

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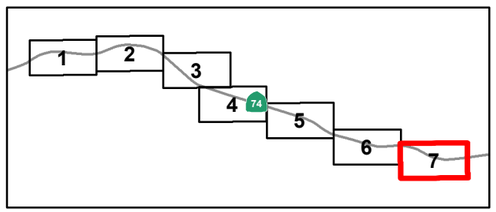


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APPENDIX J

Sheet 7 of 7

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Communities Map

12-ORA-74 PM 2.93/5.06

EA 0L7200; Project No. 1200020180

# Appendix K Site Photos

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**A.** Coast live oak (*Quercus agrifolia*) woodland growing along Ortega Highway within the ROW (02-28-2012).

**B.** View to the west of endangered arroyo toad breeding habitat in San Juan Creek within the ROW survey buffer (05-19-2012).

**C.** Northern view of the least Bell's vireo survey area adjacent to the ROW (05-19-2012).

**D.** Potential bat roost area in an oak tree along Ortega Highway (07-01-2012).

LSA

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*
Representative Site Photos
12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180

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# Appendix L Vegetation Community and Arroyo Toad Critical Habitat Impacts

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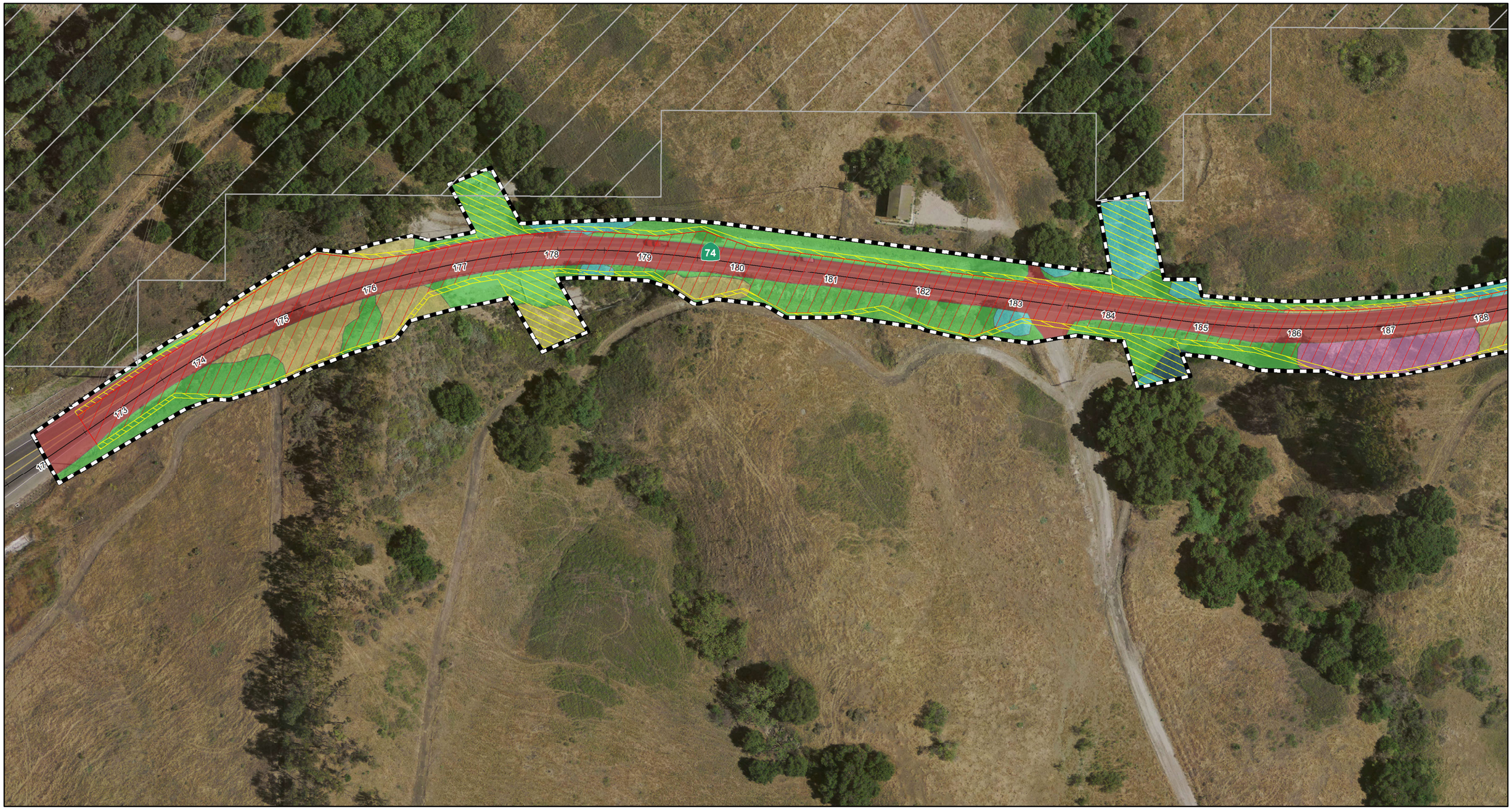


LEGEND

- Biological Study Area (BSA)
- Arroyo Toad Critical Habitat
- Permanent Impacts
- Temporary Impacts

Vegetation

- Chaparral
- Coast Live Oak Woodland
- Coastal Sage Scrub
- Non-native Grassland
- Ornamental Trees
- Southern Cottonwood-Willow Riparian Forest
- Developed Areas and Bare Ground

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SOURCE: Eagle Aerial (4/2011); LSA (2012); USFWS (3/2011)

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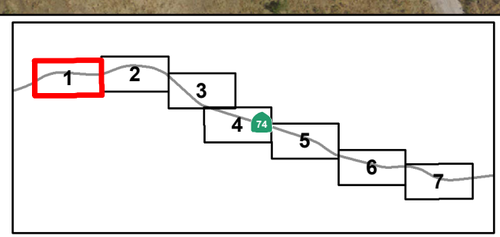
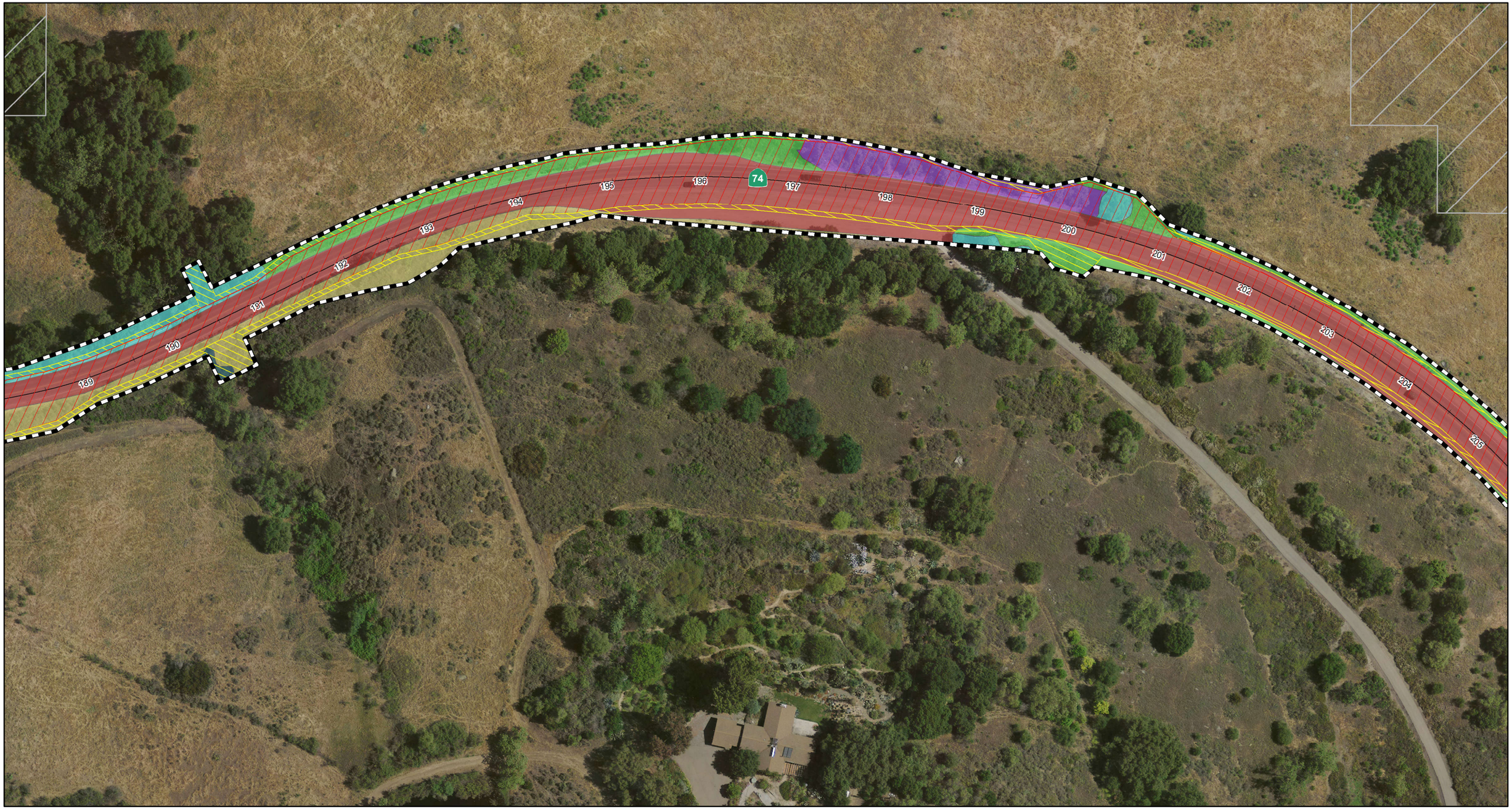



APPENDIX L
Sheet 1 of 7

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Community and Arroyo Toad Critical Habitat Impacts

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180




LEGEND

- Biological Study Area (BSA)
- Arroyo Toad Critical Habitat
- Permanent Impacts
- Temporary Impacts

Vegetation

- Chaparral
- Coast Live Oak Woodland
- Coastal Sage Scrub
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- Ornamental Trees
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SOURCE: Eagle Aerial (4/2011); LSA (2012); USFWS (3/2011)

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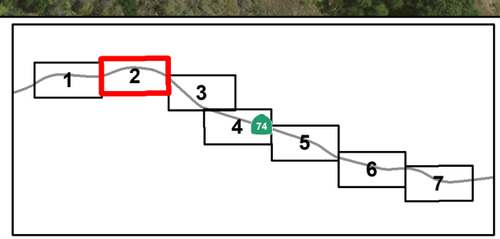
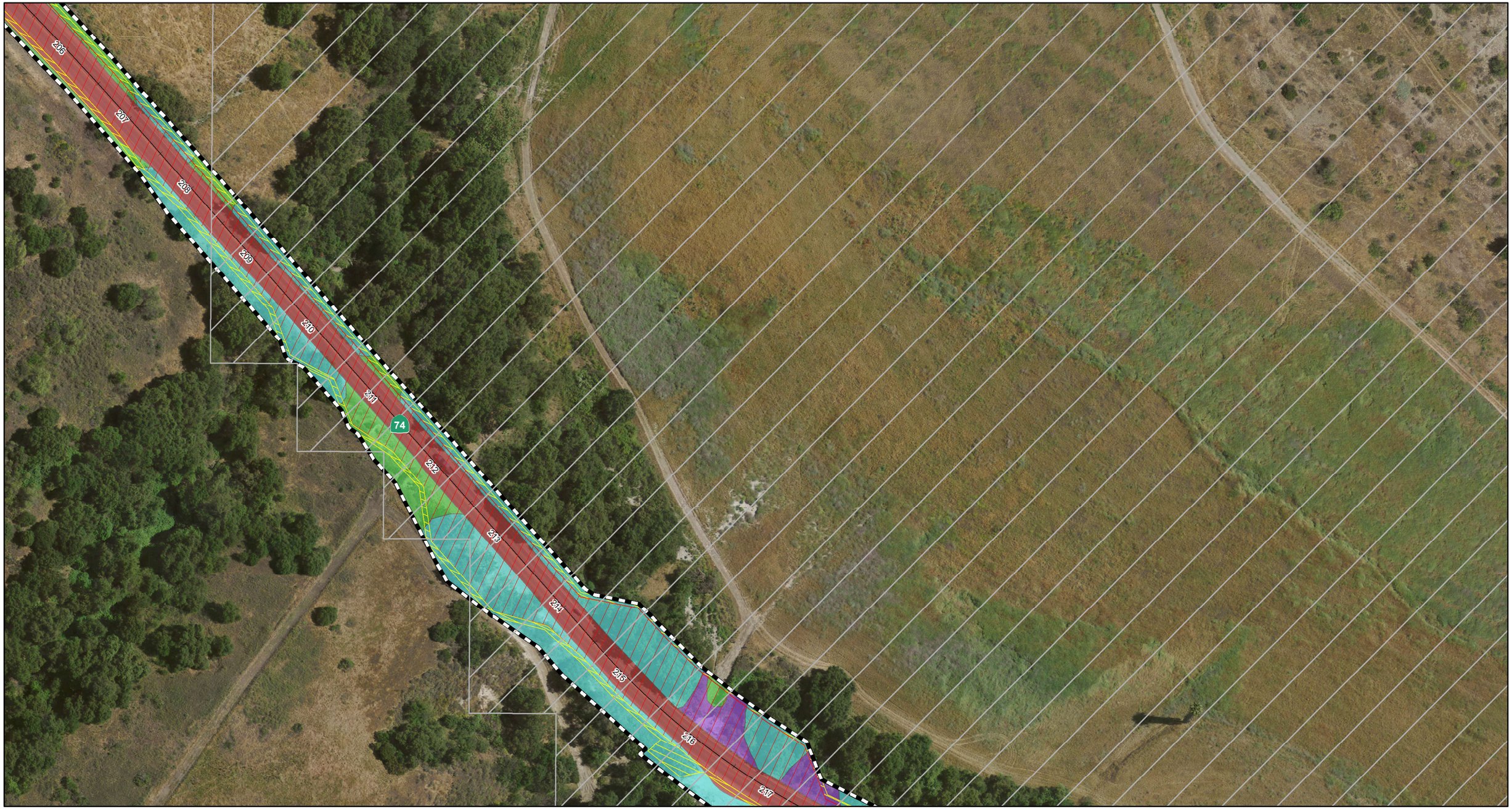



APPENDIX L
Sheet 2 of 7

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Community and Arroyo Toad Critical Habitat Impacts

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180




LEGEND

- Biological Study Area (BSA)
- Arroyo Toad Critical Habitat
- Permanent Impacts
- Temporary Impacts

Vegetation

- Chaparral
- Coast Live Oak Woodland
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SOURCE: Eagle Aerial (4/2011); LSA (2012); USFWS (3/2011)

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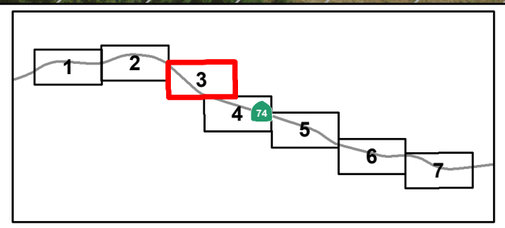


APPENDIX L
Sheet 3 of 7

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Community and Arroyo Toad Critical Habitat Impacts

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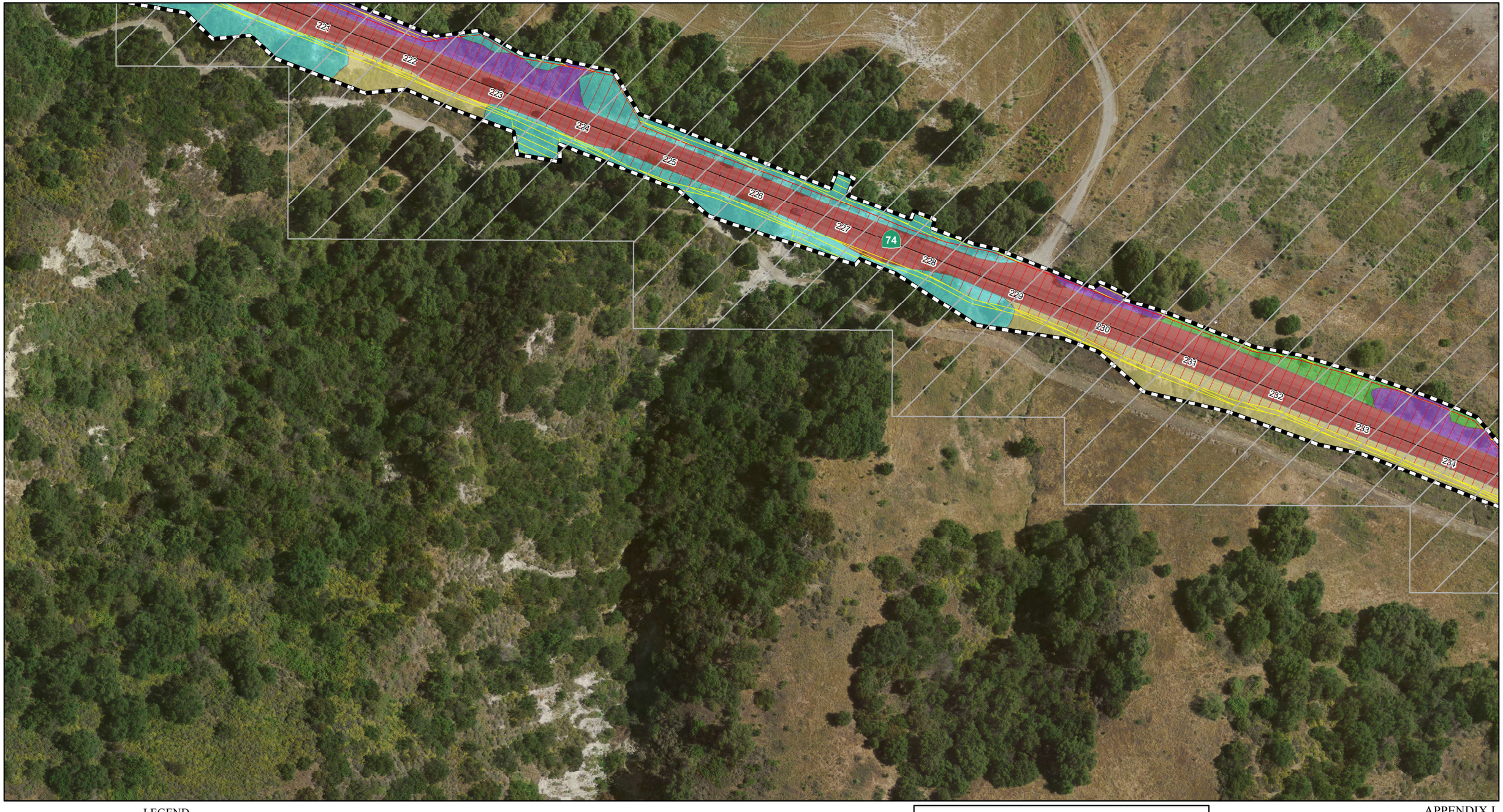


LEGEND

Biological Study Area (BSA)

Arroyo Toad Critical Habitat

Permanent Impacts

Temporary Impacts

Vegetation

Chaparral

Coast Live Oak Woodland

Coastal Sage Scrub

Non-native Grassland

Ornamental Trees

Southern Cottonwood-Willow Riparian Forest

Developed Areas and Bare Ground

N

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FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012); USFWS (3/2011)

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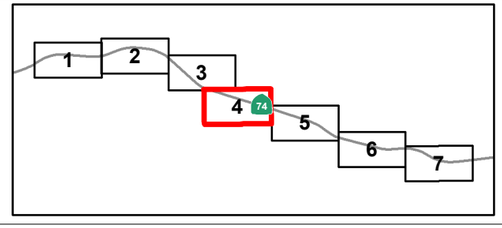


APPENDIX L

Sheet 4 of 7

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Community and Arroyo Toad Critical Habitat Impacts

12-ORA-74 PM 2.93/5.06

EA 0L7200; Project No. 1200020180

LEGEND

- Biological Study Area (BSA)
- Arroyo Toad Critical Habitat
- Permanent Impacts
- Temporary Impacts

Vegetation

- Chaparral
- Coast Live Oak Woodland
- Coastal Sage Scrub
- Non-native Grassland
- Ornamental Trees
- Southern Cottonwood-Willow Riparian Forest
- Developed Areas and Bare Ground

N

0 50 100
FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012); USFWS (3/2011)

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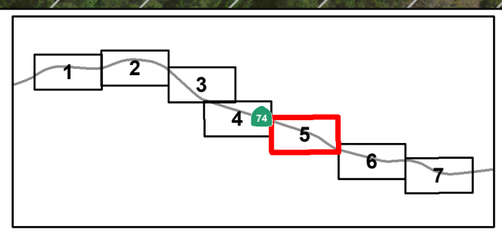
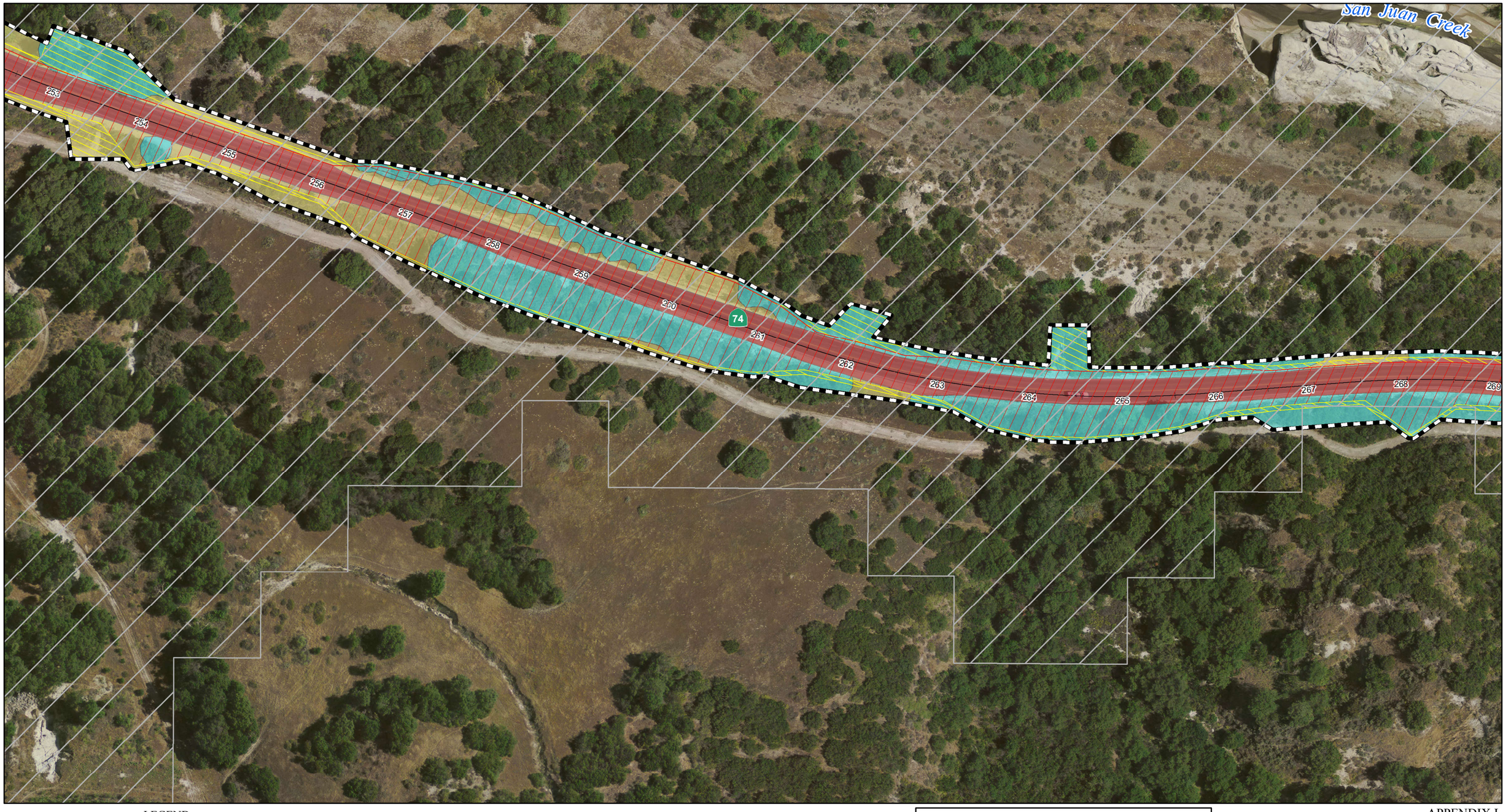



APPENDIX L
Sheet 5 of 7

*SR-74 Safety Project from*
*Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Community and Arroyo Toad Critical Habitat Impacts

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180




LEGEND

- Biological Study Area (BSA)
- Arroyo Toad Critical Habitat
- Permanent Impacts
- Temporary Impacts

Vegetation

- Chaparral
- Coast Live Oak Woodland
- Coastal Sage Scrub
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0 50 100
FEET

SOURCE: Eagle Aerial (4/2011); LSA (2012); USFWS (3/2011)

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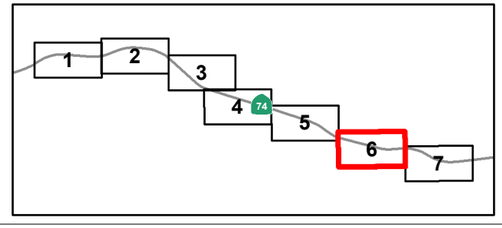
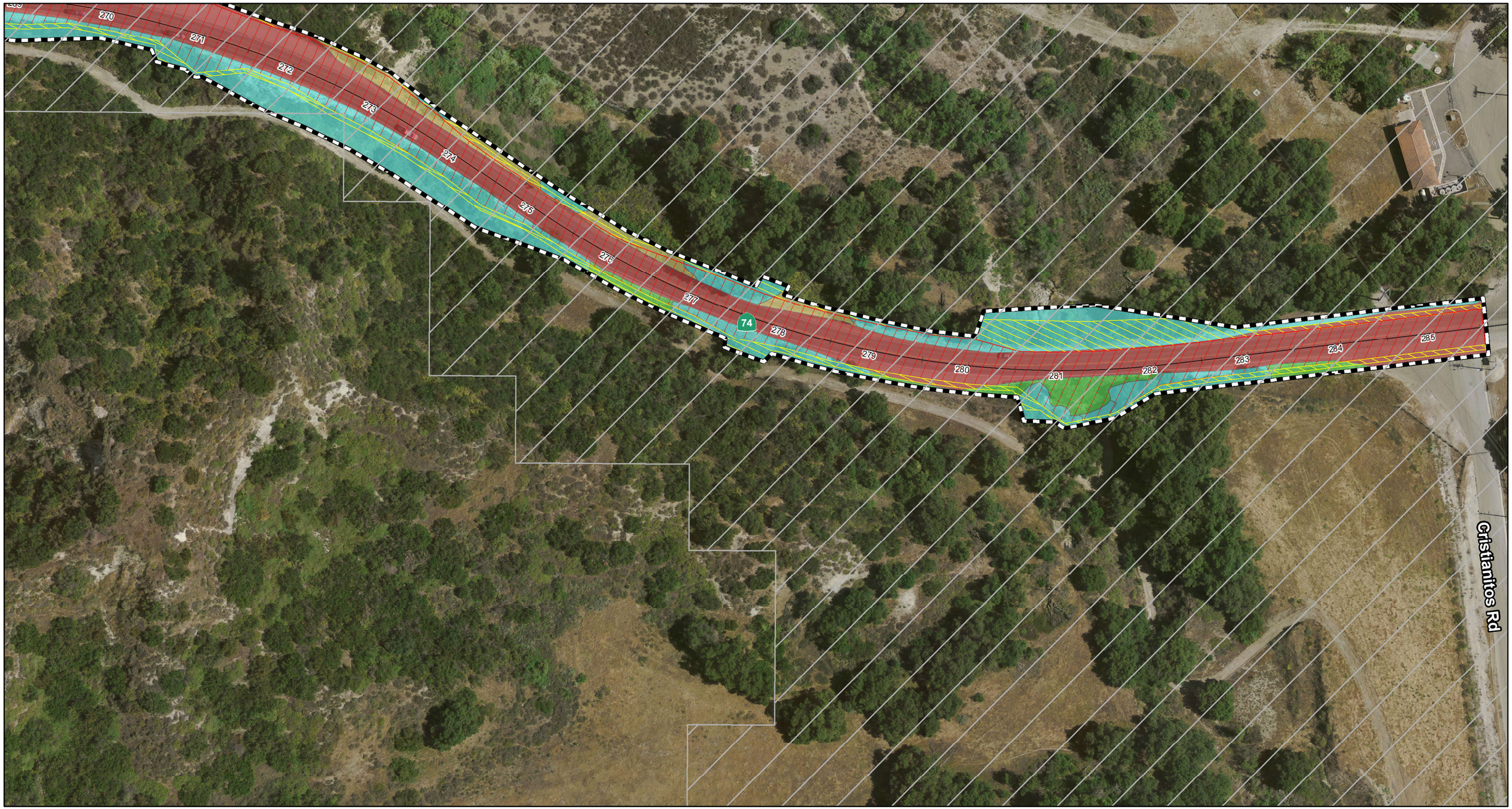



APPENDIX L
Sheet 6 of 7

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Community and Arroyo Toad Critical Habitat Impacts

12-ORA-74 PM 2.93/5.06
EA 0L7200; Project No. 1200020180




LEGEND

- Biological Study Area (BSA)
- Arroyo Toad Critical Habitat
- Permanent Impacts
- Temporary Impacts

Vegetation

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0 50 100
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SOURCE: Eagle Aerial (4/2011); LSA (2012); USFWS (3/2011)

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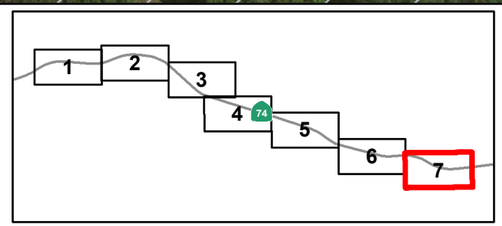


APPENDIX L
Sheet 7 of 7

*SR-74 Safety Project from Antonio Parkway/La Pata Road to Cristianitos Road*

Vegetation Community and Arroyo Toad Critical Habitat Impacts

12-ORA-74 PM 2.93/5.06
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