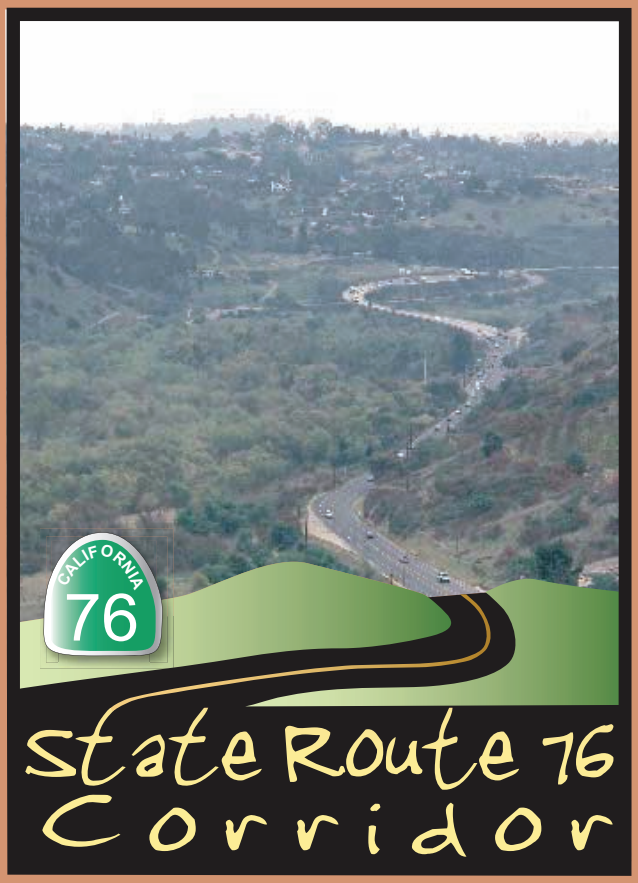
San Diego County, California * District 11 - SD - 76, KP 11.7/21.1 (PM 7.3/13.1) * 080100

State Route 76
Melrose to South Mission Hwy Improvement Project



Final Environmental Impact Report/ Final Environmental Impact Statement

Volume II: Appendices

November 2008

Prepared by
the State of California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

Caltrans
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APPENDIX A
RESOURCES EVALUATED RELATIVE TO THE REQUIREMENTS OF SECTION 4(F)

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INTRODUCTION

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

This section of the document discusses parks, recreational facilities, wildlife refuges and historic properties found within or adjacent to the project area that do not trigger Section 4(f) protection either because: 1) they are not publicly owned, 2) they are not open to the public, 3) they are not eligible historic properties, 4) the project does not permanently use the property and does not hinder the preservation of the property, or 5) the proximity impacts do not result in constructive use.

APPLICABILITY OF SECTION 4(F)

Section 4(f) of the USDOT Act of 1996, codified in federal law as 49 U.S.C. 303, declares that "[it] is the policy of the United Sates Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that "the Secretary [of Transportation] may approve a transportation program or project…requiring the use of any publicly owned land from a public park, recreation area, wildlife and waterfowl refuge of national, State or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State or local officials having jurisdiction over the park, area, refuge, or site) only if:

(1) there is no prudent and feasible alternative to the using that land; and

(2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from such use.

Section 4(f) further requires consultation with the Department of the Interior and. As appropriate, the involved offices of the Department of Agriculture and Housing and Development in developing transportation projects and programs which use lands protected by Section 4(f).

The FHWA regulations implementing Section 4(f) state "any use of lands from a Section 4(f) property should be evaluated early in the development of the action when alternatives to the proposed action are under study" (23 CFR 771.135[b]). A project "uses" a Section 4(f) resource when: (1) it permanently incorporates land from the resource into a transportation facility; (2) it temporarily but adversely occupies land that is part of the resource; or (3) it "constructively" uses the resource.

The provisions of Section 4(f) do not protect properties that have been designated for future planned park and recreation uses and are currently on privately owned land. However, to ensure that the highway and these planned parks are jointly developed in a sensitive and mutually compatible manner, Caltrans would continue to coordinate the development of the highway with these surrounding land uses.

PROJECT DESCRIPTION

The proposed project is located in northern San Diego County on State Route 76 (SR-76) from Melrose Drive to South Mission Road (Figure 1). The proposed project covers a distance of approximately 9.4-kilometers (5.8-miles). Within the proposed project limits, SR-76 is a conventional highway with two lanes, non-standard shoulders, and signalized at-grade intersections. The project's purpose is to maintain or improve the existing and future traffic operations in the SR-76 corridor, between Melrose Drive and South Mission Road, in order to improve the safe and efficient local and regional movement of people and goods, while minimizing environmental and community impacts for the planning design year of 2030.

In addition to the No Build Alternative, two build alternatives are analyzed within the project study corridor: the Existing Alignment Alternative and the Southern Alignment Alternative (Figure 2). These two alignment alternatives are virtually identical between Melrose Drive and East Vista Way but diverge to opposite sides of the San Luis Rey River as they progress east of East Vista Way.

The No Build Alternative represents the option of no action. This alternative would not address the proposed project's purpose and need. No construction activities would occur.

No changes are proposed to the existing number of lanes or the configuration of existing intersections along the corridor under this alternative.

The Existing Alignment Alternative would widen SR-76 to four lanes with right-of-way and grading to accommodate future widening if justified. A barrier would be placed within the roadway median. Additionally, this alternative would construct shoulders to provide for emergency parking while not precluding use by pedestrians and bicycles.

The proposed Southern Alignment Alternative would widen and realign SR-76 on an alignment south of the San Luis Rey River. From Melrose Drive to East Vista Way, the existing conventional highway would be expanded with right-of-way and grading to accommodate an ultimate six-lane facility and follow the current alignment of SR-76. From East Vista Way to South Mission Road, the highway would be located on the south side of the San Luis Rey River and would reconnect at the existing SR-76/South Mission Road intersection. A barrier would be placed within the roadway median. Additionally, this alternative would construct shoulders to provide for emergency parking and pedestrian and bicycle access.

RESOURCES NOT SUBJECT TO SECTION 4(F)

Draft San Luis Rey River Park Master Plan

The County of San Diego is proposing to create a River Park in a 13.7 kilometer (8.5 mile) stretch of the San Luis Rey River between Oceanside and I-15 (Figure 3). The 2005 draft San Luis Rey River Park Master Plan (Plan) establishes a framework for the creation of a river park that incorporates passive and active recreational amenities for the Fallbrook and Bonsall community planning areas. It would also establish the framework for a habitat preserve and multi-use trail system that would serve the larger region.

Plan Planning Process

The planning process for the Plan included, among other things, coordination with the Department and the definition of the project boundary (Core Study Area or CSA); both are discussed immediately below.

Coordination with Caltrans

The Plan emphasizes the fundamental nature of the coordination effort with Caltrans and notes that the continuation of these efforts would be equally critical in the development of

the park implementation projects that ultimately arise for the Plan. This is important given that the SR-76 Project runs along the San Luis Rey River and through the CSA (Figure 3). The County of San Diego, cognizant of this fact, recognized the need to develop the Plan in concert with Caltrans' development of the SR-76 Project. Below are excerpts from the Plan which demonstrate the County's intent to finalize and implement the Plan around the development of the SR-76 project:

1) With the intention of lessening traffic congestion along the section of State Route 76 (SR-76) which runs parallel and immediately adjacent to this stretch of the San Luis Rey River corridor, Caltrans is currently planning the improvements of this segment of SR-76. These improvements will result in impacts upon biologically sensitive riparian habitat that will require…mitigation. The County would like to establish a structure within the San Luis Rey River Park that will allow the park to become a major recipient of Caltrans' and other mitigation lands. These lands would be incorporated into the River Park as vital components of the Parks' preservation/restoration core.

2) Within the sensitive context of the river corridor and floodplain, active recreation nodes in particular must be carefully located to work in synergy with park's preservation/restoration core, while minimizing park-related traffic congestion along SR-76.

3) The community is very interested in the expansion of SR-76 and its coordination with the development of the SLR River Park, and specifically, how traffic will be affected by park development. While people initially had concerns that the park may inhibit the expansion of SR-76, those concerns were dispelled once it was explained that the County is working in full coordination with Caltrans.

4) The Master Plan should be fully coordinated with all current studies and planning initiatives including, but not limited to…the future expansion or improvement of SR-76.

5) Finalization of the design of Tier A sites [defined and discussed below] should <u>not</u> [emphasis added] occur until Caltrans solidifies plans for the expansion/relocation of SR-76.

<u>Core Study Area</u>

As noted in the Plan, one of the initial planning steps was to define the study area for the project (see Figure 3). The draft CSA was created through evaluation of the following

four primary criteria: 100-year/500-year floodplains, pre-approved mitigation areas, habitat value, and existing development. The draft CSA boundary encompasses areas that fall within any of these criteria and are contiguous with the river corridor. Where areas falling within these criteria extended more than 2.4 kilometers (1.5 miles) from the river corridor, a subjective decision was made regarding the limits of the CSA, and, in these areas, the boundary was defined by a road or identifiable geographical boundary. After this was accomplished, the CSA boundary was refined by crosschecking it against aerial photography and revised to remove developed areas. Lastly, it was further refined according to individual landowner requests. The Plan notes that the boundary is likely to evolve as the planning and design process progresses.

The CSA is not a "hard line" boundary; rather, it is the study area that was used to establish the framework for the river park. Within the CSA, potential park development opportunities were identified. These individual opportunities are discussed below. The CSA within the project area is depicted on Figure 4.

Park Programming Zones

Based upon County and community input, three programming zones within the CSA were established, each with unique defining characteristics and opportunities. The SR-76 project is located entirely within Zone 2 (Figure 5), which is at the southwestern end of the CSA and close to the Bonsall School, the Community Center, and the City of Oceanside boundary.

Land Ownership within the CSA

There are several constraints associated with the development of the river park within the CSA boundaries; one of these is the disposition of land ownership. Figure 6 depicts those lands within Zone 2 of the CSA that are currently publicly owned. As noted in the Plan, the lack of public property within the CSA creates a fundamental constraint to park development given that the County of San Diego would have to enter into agreements with private property owners before implementation of any park improvements.

River Park Components

Within the CSA, the Plan identifies the types and quantities of different park elements and uses that could be incorporated within the biologically sensitive San Luis Rey River corridor. With respect to recreation, three tiers are conceptualized: Tier A, Tier B, and

Tier C. Formal designation of these sites awaits finalization of the Plan and the certification of the corresponding Environmental Impact Report (EIR).

Tier A – Planned Active Park Nodes

Tier A sites are those that would require substantial site disturbance or grading. They are proposed in the following locations: 1) areas with little or no native vegetation, 2) areas that are either currently/recently disturbed, 3) areas that are agricultural lands, or 4) areas that are covered by non-native grassland or eucalyptus woodlands. Tier A sites are those that would be sports fields, parking and staging areas, and/or interpretive gathering spaces. The Plan identifies two Tier A sites within Zone 2.

Tier B – Planned Passive Park Nodes

Identified Tier B sites are medium to low intensity passive use sites that would require minimal impacts to the existing site. They would have relatively small footprints and would accommodate passive activities such as picnicking, birding, and resource interpretation. The Plan identifies 3 Tier B sites in Zone 2.

Tier C – Planned Trail System

Tier C sites would be multi-use (hiking, biking, and equestrian) trails. The sites would be linear in nature and would weave through riparian and upland habitats. They would provide access to the diverse natural and cultural resources located in the San Luis Rey River corridor.

Trail locations are conceptual in the Plan, but it is expected that trail routes would utilize the proposed trail network identified in the County's Trails Master Plan (discussed below), which identifies a need for two trails in this segment of the San Luis Rey River corridor, one north and one south of the river.

Open Space Preserve

In addition to the Tier sites, the Plan identifies an open space preserve that would be approximately 647 hectares (1600 acres) in size and run the length of the CSA within the river. The open space preserve would consist of the majority of the River Park's area and would include all areas not dedicated to recreational uses or to the multi-use trails. The preserve would contain the most sensitive areas both of wetland and riparian-related habitat and upland habitat.

Timing of Park Implementation

After completion of the Draft San Luis Rey River Park Master Plan Document, and before approval of the final Master Plan, the County must complete an Environmental Impact Report (EIR). Because the Park Master Plan has not been finalized, none of the Tier A, B, or C sites have been formally designated as park sites. In addition, the Open Space Preserve has not been designated as such. The County is in the process of preparing the EIR and is anticipating a final document sometime during the winter of 2008.

Analysis of Planned Park Sites and Open Space Preserve within Zone 2

Because the CSA boundary does not constitute a park boundary, but rather a planning boundary, the analysis below will not discuss all of the lands within it's boundary, rather, it will focus only on those lands that are conceptualized as park or recreation areas. The Open Space Preserve will be discussed as well.

Planned Site A-3

Planned Site A3, also referred to as "the Model Airplane Site" in the Plan, is a long and narrow parcel of approximately 10.92 hectares (27 acres) in size and located between the San Luis Rey River and the existing SR-76 alignment (Figure 7). The County of San Diego currently owns the parcel. The site is covered in non-native grasses and it is periodically mown to retain its current condition. It is a relatively flat site and, currently, part of the site is used by a private club for model airplane flying. (Please see the discussion below under "Existing Model Airplane Site" for an analysis of the existing parcel in terms of Section 4(f)). Current vehicle access to Site A3 is via the existing SR-76, just southeast of Via Grenada. The site is bounded on the north by an earthen berm and its driveway has a locked gate.

Site A3 would be accessed by SR-76 and the planned Tier C trail system in the river valley. It is identified as a proposed active use site because of its lack of sensitive vegetation and cultural resources, shallow slope gradients, and proximity to Bonsall Elementary School and residences.

Active uses planned at Site A3 include a Great Lawn for gatherings (which could also be used as a model airplane runway), two baseball fields, up to three soccer fields, a play and picnic area, an interpretive garden, and a restored habitat area.

It is clear that the planned Site A3 is in public ownership. However, the site has yet to be officially designated as a park by the County of San Diego as this would only occur with the adoption of the Final Park Master Plan and the certification of the corresponding EIR. Moreover, the Plan depicts Site A3 as a "Concept Design" with a proposed park boundary that allows for the future right-of-way of a widened SR-76. This is in keeping with the principles expressed in the Park Master Plan as noted above, particularly the following, "the finalization of the design of Tier A sites should not occur until Caltrans solidifies plans for the expansion/relocation of SR-76."

Given that Site A3 has not been formally designated as park, Site A3 is not a 4(f) Resource and the provisions of Section 4(f) are not triggered.

Planned Site A2

Planned Site A2, also referred to as the "Little Gopher Canyon Site" in the Plan, is a small site approximately 1.61 hectares (4 acres) in size and is privately owned. It is located near the intersection of Little Gopher Canyon Road and Old River Road (Figure 7). The front half of the site is flat while the back half of the site slopes up to the adjacent hillside. The front half is partially disturbed and partially vegetated with non-native grasslands, while the back has scrub/chaparral vegetation.

The Plan identifies site A2 as an opportunity for a dog park combined with picnic and passive park facilities. The Plan also notes that the site could be a trailhead and a parking/staging area the many equestrians that live in the area. The park would be open to the general public and would be accessed by vehicle at Little Gopher Canyon Road and Old River Road. Pedestrians and equestrians would be able to access the park from the planned river trail system.

Because Site A2 is not in public ownership and has not been formally designated as park, Site A2 is not a Section 4(f) Resource and the provisions of Section 4(f) are not triggered.

Planned Tier B Sites

The Plan is silent on the specifics about two of the three of the planned Tier B sites within Zone 2; other than depicting them on a map (Figure 7), no other information is provided. The exception is the planned site in the vicinity to Site A2. The Plan notes that the abandoned Walnut Grove situated across the road from Site A2 would be an ideal location for a Tier B park, such as a picnic area.

One of the two planned sites that are not discussed in the Plan is conceptually located on land that is currently publicly owned. The Walnut Grove site and the other Tier B site are both conceptually located on land that is both privately and publicly owned.

As noted above, because none of the Tier B Sites located in Zone 2 have been formally designated, they do not qualify as Section 4(f) Resources. The three Tier B sites in Zone 2 are not Section 4(f) Resources and the provisions of Section 4(f) are not triggered.

Planned Tier C Sites

Trails are proposed in the SR-76 Melrose to South Mission Highway Improvement Project corridor by two separate documents, the County of San Diego's 2005 Community Trails Master Plan (CTMP) and the draft San Luis Rey River Park Master Plan. Portions of these planned trails traverse both private and public land.

The CTMP proposes two community trails (Figure 8) that roughly parallel the highway on either side of the San Luis Rey River. The northern trail would start at the old Bonsall Bridge and, after meandering between the existing SR-76 alignment and the river, terminate near I-15. The trail would be for non-motorized use only. It is depicted as being entirely south of the existing SR-76. The second trail would be similar in extent to the northern trail and it would be located on the south side of the river and to the north of Old River Road.

The CTMP notes that the proposed trails shown on the trails map are depicted as general alignments. The document defines "general alignment" as the general location of a future trail within a designated corridor so that the specific alignment can be determined during the review and approval process when a discretionary application is submitted for a development permit for land that includes a trail corridor. The CTMP concludes that a general alignment is useful because it allows the trail to be located to avoid extreme topographical conditions, sensitive habitat, or other site-specific constraints.

The trail network proposed in the Plan is the one identified in CTMP. The Plan notes that, to the extent possible, the river park trail network should implement the intention of the CTMP. Other than the two trails described above, the Plan does not depict or call for the addition of any other proposed trails.

With respect to Section 4(f), of the two planning documents discussed above, the one of relevance is the CTMP since it is final and has been adopted by the County of San Diego.

Absent this document, none of the planned trails would qualify as Section 4(f) Resources given that the draft San Luis Rey River Park Master Plan is not final. However, because the CTMP has formally designated the trails, those portions on publicly owned land are Section 4(f) resources. Those portions of the planned trails identified in the CTMP that are conceptualized on private property are not Subject to 4(f) since the land is in private ownership. Those portions of the planned trails on privately owned land within Zone 2 are not Section 4(f) Resources and the provisions of Section 4(f) are not triggered.

Open Space Preserve

The Open Space Preserve identified in the Plan (Figure 9) is on private and publicly owned land. Irrespective of ownership, the land conceptualized as Open Space in the Plan is not a Section 4(f) resource given that the Plan is not final, and as such, the Open Space has not been formally designated. The land identified in within Zone 2 of the Plan as Open Space is not a Section 4(f) Resource and the provisions of Section 4(f) are not triggered.

Existing Model Airplane Site

The Model Airplane Airport Site is a long and narrow site, approximately 2.0 hectares (5.0 acres) in size, and is partially within the base floodplain (Figure 10). It is located on a vacant lot that is currently owned by the County of San Diego. The western portion of the parcel is graded while the eastern and southern portions are vegetated open space. The land is currently zoned as both agricultural and vacant/undeveloped. The site is currently used by the Fallbrook RC Flyers Group (Group) to fly radio-controlled-airplanes. Vehicle access to this site is via the existing SR-76, just southeast of Via Grenada.

There are several factors that make the location ideal in terms of its use as a model airplane facility. First, it is located away from buildings, which means there are no obstructions within the flying radius. Second, it is also located away from noise-sensitive receptors, such as homes and schools. Third, and last, the site is level, which allows the planes to easily take off and land on the graded dirt runway.

The existing facilities on site are minimal. The site is enclosed on the northern side by an earthen berm and access to the area is via a locked and gated driveway. There is a dirt parking lot that accommodates approximately 20-25 cars. To the south, a large area has been graded to serve as the runway for the model airplanes. Adjacent to the runway are tables, which lie underneath a canopy.

Beyond the County of San Diego conceptually locating Site A3 (discussed above) at this location, there are no formal, additional facilities planned for this location. The use of the land by the Group constitutes a temporary land use as no lease or formal agreement exists between the Group and the County of San Diego. The County of San Diego has communicated to the Group that they would be displaced when the park plan discussed above is implemented.

Access is allowed only to members of the Group and the Academy of Model Aeronautics (AMA). Currently, the Group has 157 members. These members are able to fly their planes 7 days a week, and typically do so in the morning and early afternoon hours. Spectators are allowed on-site, but only in the company of a club-member.

Seven other radio-controlled airplane clubs exist within a 40-kilometer (25-mile) radius of this site. The clubs fly at various sites in the vicinity, including: Temecula, Hemet, North County, Miramar, Poway, and near Camp Pendleton. Persons flying radio-controlled planes at these sites must be a member of that specific club and the AMA, or be a guest of one of their club-members.

Although the County of San Diego owns this site, the model airplane airport is not a Section 4(f) Resource. The County of San Diego does not consider the area to be a park and it does not consider its major purpose to be park or recreation (personal communication).

The entrance to the site Model Airplane Airport site is surrounded on the north by an earthen berm and access to the area is via a road/driveway that is gated and locked. Only members of the Fallbrook RC Flyers Club and their guests are allowed access to the site. Section 4(f) does not apply when visitation is permitted to only a select group and not the general public.

Because the County of San Diego does not consider the existing model airplane site to be a park or recreation area, and due to the fact that the area is not open to the general public, the Existing Model Airplane Site is not Section 4(f) Resource and the provisions of Section 4(f) are not triggered.

Existing Informal Trail Network

As seen on Figure 11, there is an existing, informal “network” of trails within the river corridor. These trails traverse both public and private land. These trails are unofficial,

and are not formally designated as existing trails or maintained by the County of San Diego. As such, they are not Subject to 4(f), are not Section 4(f) Resources, and the provisions of Section 4(f) are not triggered.

San Luis Rey Downs Golf Resort

The San Luis Rey Downs Golf Resort is a privately owned resort located at 31474 Golf Club Drive in northern Bonsall (Figure 12). The resort contains a 6,750-yard 18-hole golf course and a 10-acre driving range, both of which are open to the public. It also features a country club, 26-room hotel lodge, restaurant, tennis club, private swimming pool, and pro golf shop. The country club has over 1,000 members, largely from the nearby communities of Bonsall, Oceanside, and Vista.

While the San Luis Rey Downs Golf Resort plays an important role in maintaining community character and cohesion throughout the project area, it is not a Section 4(f) resource. The San Luis Rey Downs Golf Resort is privately owned and the provisions of Section 4(f) are not triggered.

Bonsall Preserve

The Bonsall Preserve is a 11 hectare (27 acre) wildlife refuge immediately north of SR-76 and west of South Mission Road at the east end of the proposed SR-76 Project corridor (Figure 12). It would not be impacted by either of the two build alternatives. The preserve consists of wetlands and is habitat for numerous bird species. The Bonsall Preserve is owned by the Fallbrook Land Conservancy. Because of its private ownership status, the Bonsall Preserve is not a Section 4(f) Resource and the provisions of Section 4(f) are not triggered.

SECTION 4(F) RESOURCES NOT USED

Bonsall Elementary School

Bonsall Elementary School is an existing 9-hectare (23-acre) school site along Old River Road (Figure 12). It would not be directly impacted by either of the two build alternatives. Until recently, the recreational facilities at the school consisted of asphalt playgrounds and athletic fields: grass softball field, an additional ball field with an earthen infield, and a track. The campus perimeter is not secured and under normal operating conditions, all of these athletic facilities were normally available for public use. Currently however, these fields have all been displaced by construction activity and they

are the site of new replacement school buildings. It is anticipated that the fields would be replaced once construction of the new buildings is completed.

Based upon communications with school officials, the school's future procedures concerning general public access to future recreational facilities have not yet been determined. Upon the assumption that the pre-existing walk-on access would be perpetuated to the new recreation facilities, the school's facilities are public land used for recreational purposes and they are considered a Section 4(f) property.

As noted above, neither of the proposed build alternatives would permanently or temporarily impact any portion of the Bonsall Elementary School. The Existing Alignment Alternative would be approximately 400 meters (1312 feet) north of the school across the San Luis Rey River while the Southern Alignment Alternative would be approximately 115-meters (380-feet) to its north.

The January 2007 Noise Study Report prepared for the project indicates that existing ambient exterior noise level at the play area of the Bonsall Elementary School is 57 decibels. 23 CFR 772 states that a traffic noise impact is considered to occur if a project results in a substantial noise increase or when the predicted noise levels approach or exceed the Noise Abatement Criteria (NAC). The NAC for a school is 67 decibels. With respect to the Existing Alignment Alternative, the school was not considered as sensitive receptor, given the distance between the school and the alignment, and there is no noise impact. The Southern Alignment Alternative would increase the noise level to 6o decibels, which is not substantial and below the NAC. The Southern Alignment Alternative would not impact to the Bonsall School.

The proximity impacts will not substantially impair the activities, features, or attributes of the school and its facilities.

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State Route 76 Corridor

Figure 1
Project Location Map

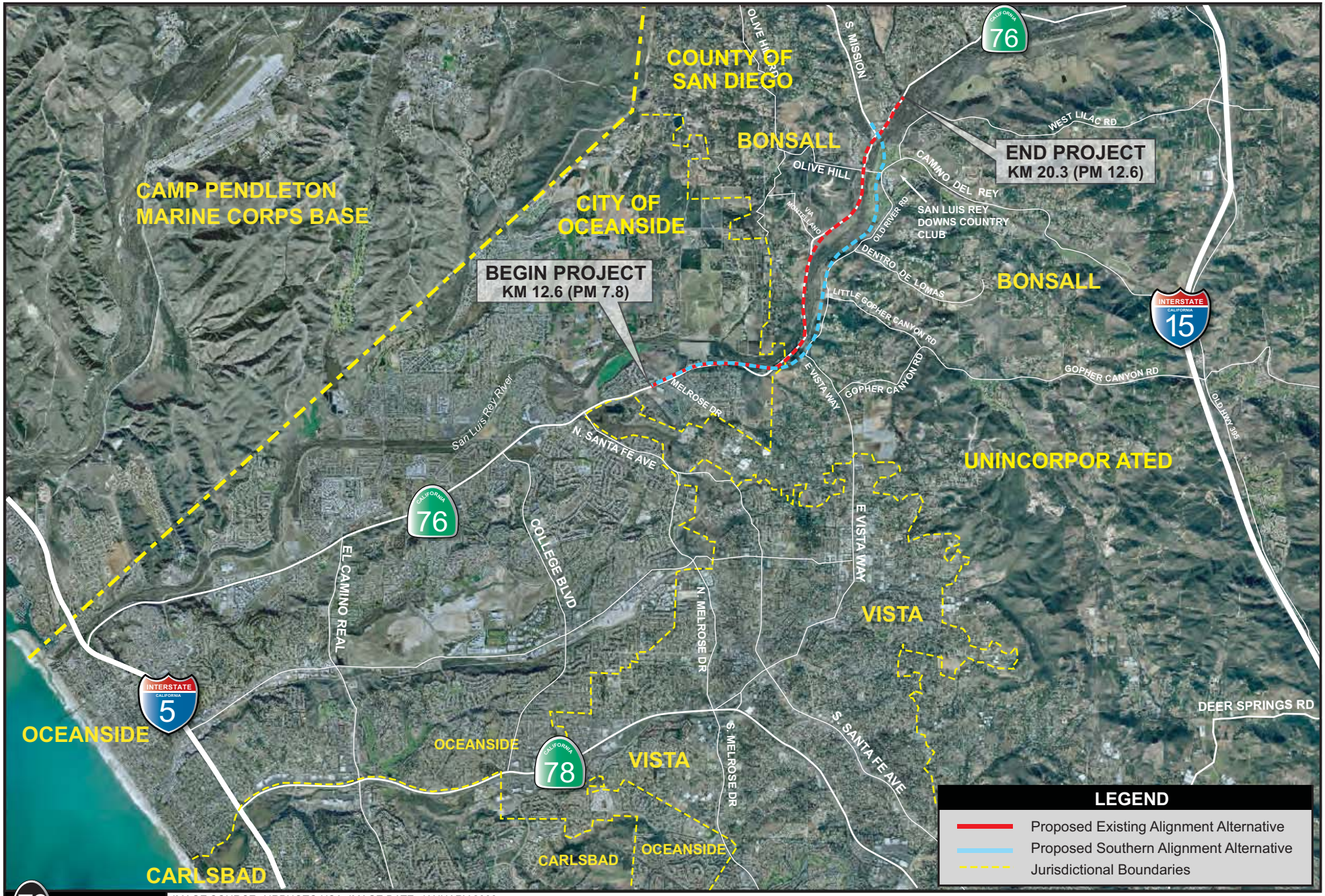


IMAGE SOURCE: AIRPHOTO USA, IMAGE DATE: JANUARY 2006

No Scale

Figure 2
Project Vicinity Map

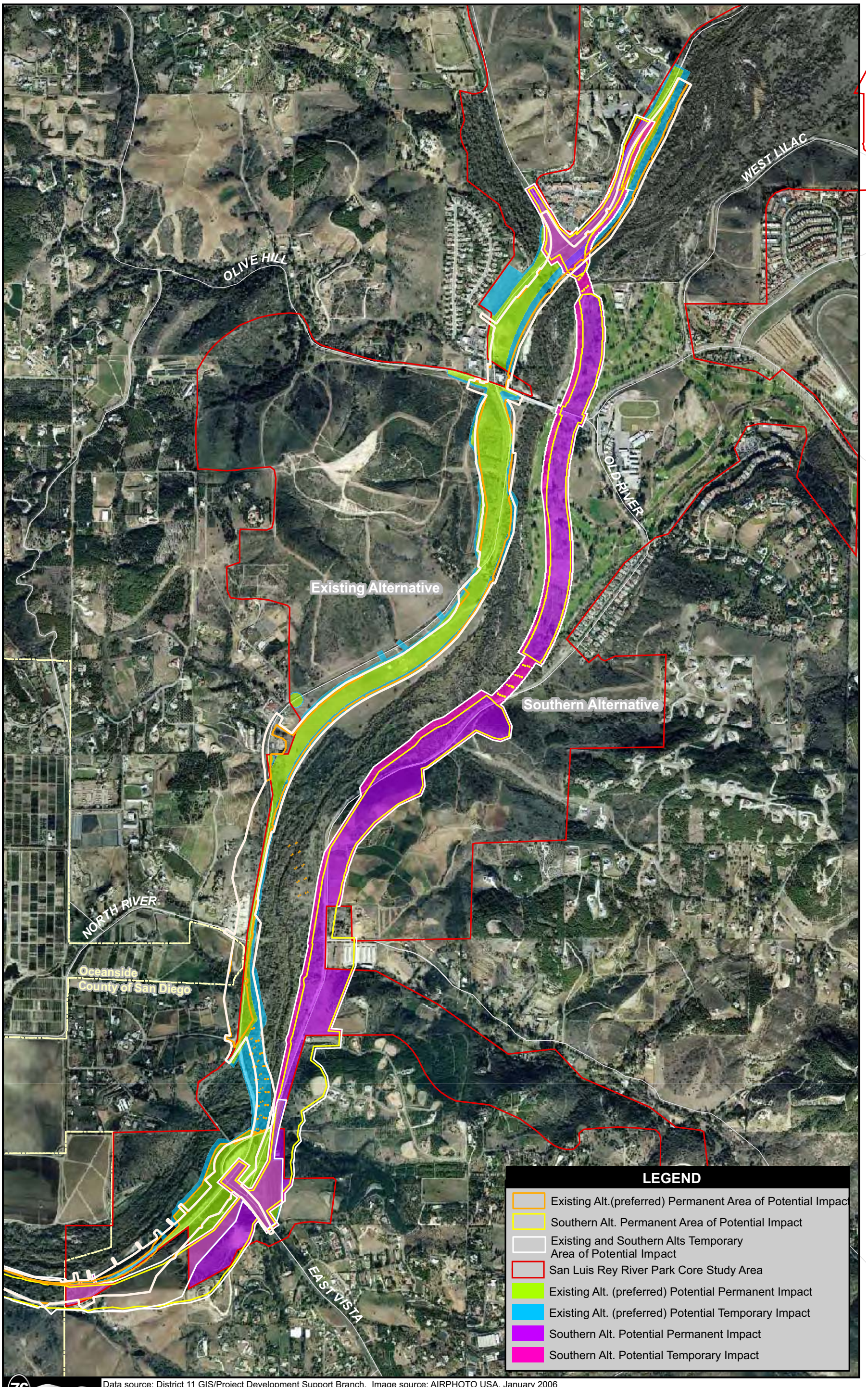


Figure 3

San Luis Rey River Park Core Study Area

76 State Route 76 Corridor

Image Source: Airphoto_USA; Image date: January 2006

0 250 500 1,000 Feet

Figure 4
Core Study Area within Project Area

76 State Route 76 Corridor

Image Source: Airphoto_USA; Image date: January 2006

0 250 500 1,000 Feet

Figure 5
CSA with Zone 2

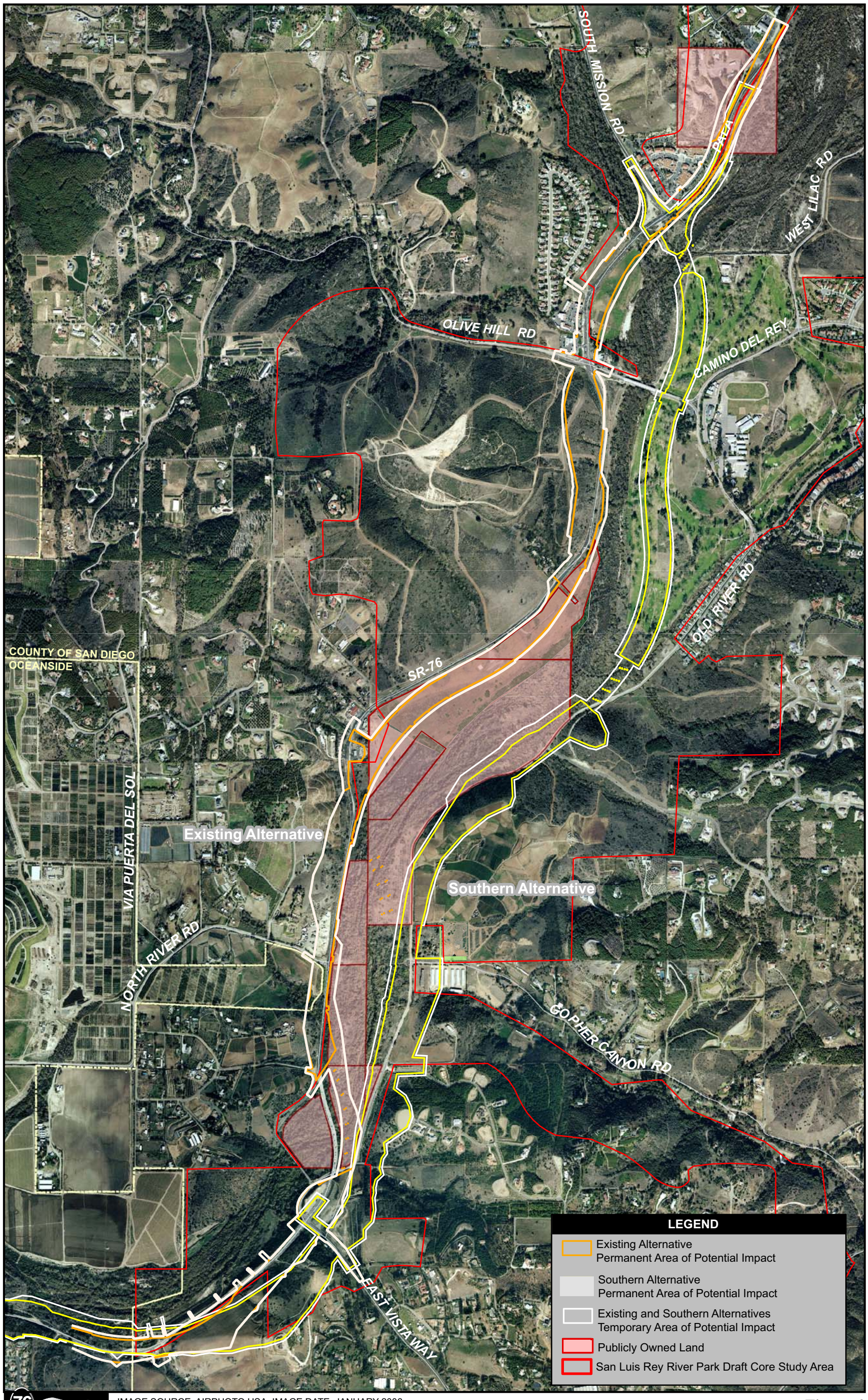


IMAGE SOURCE: AIRPHOTO USA, IMAGE DATE: JANUARY 2006

State Route 76 Corridor

Figure 6
Publicly Owned Land
with Proposed Existing (preferred) and Southern Alignment Alternatives

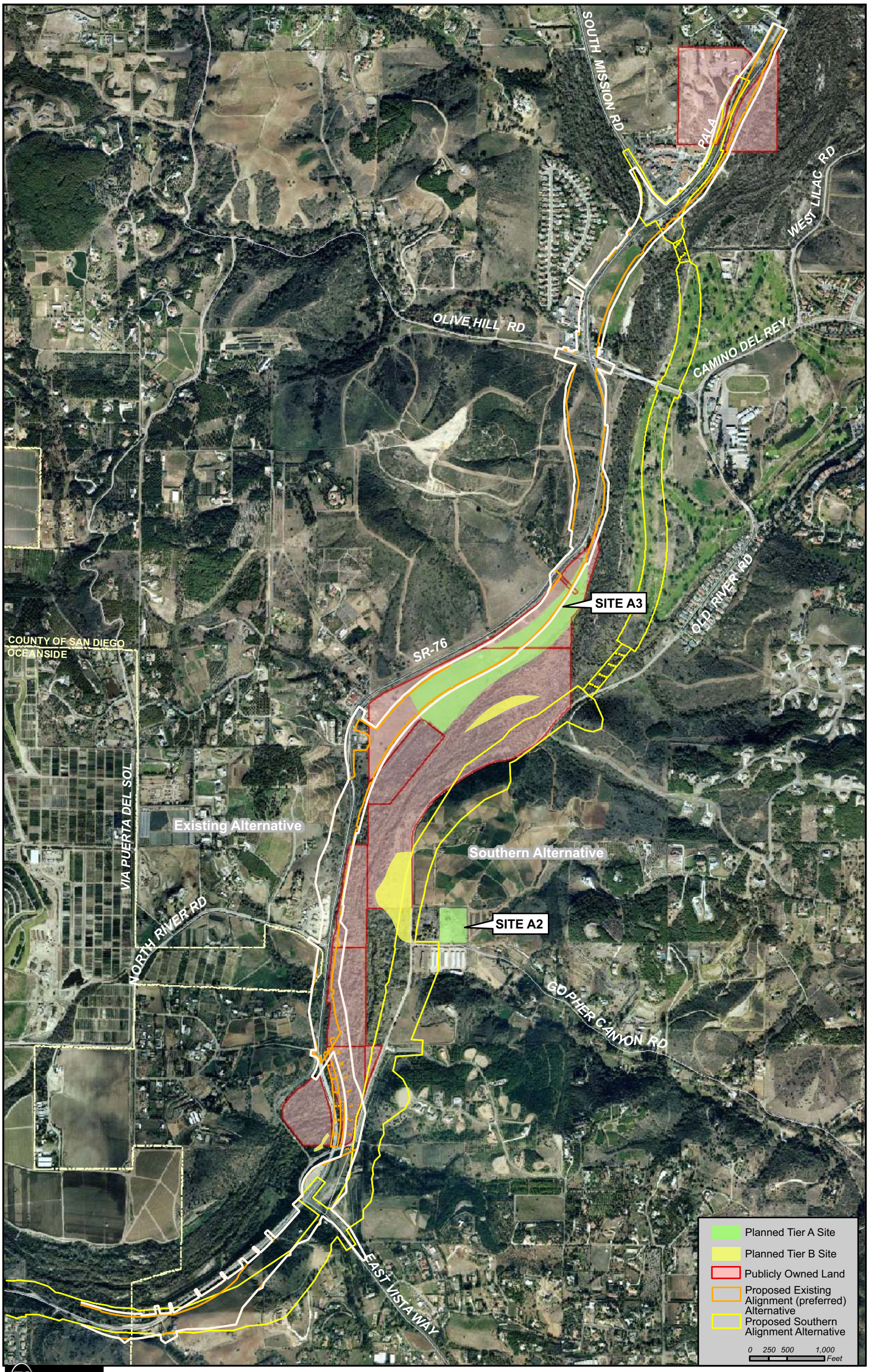
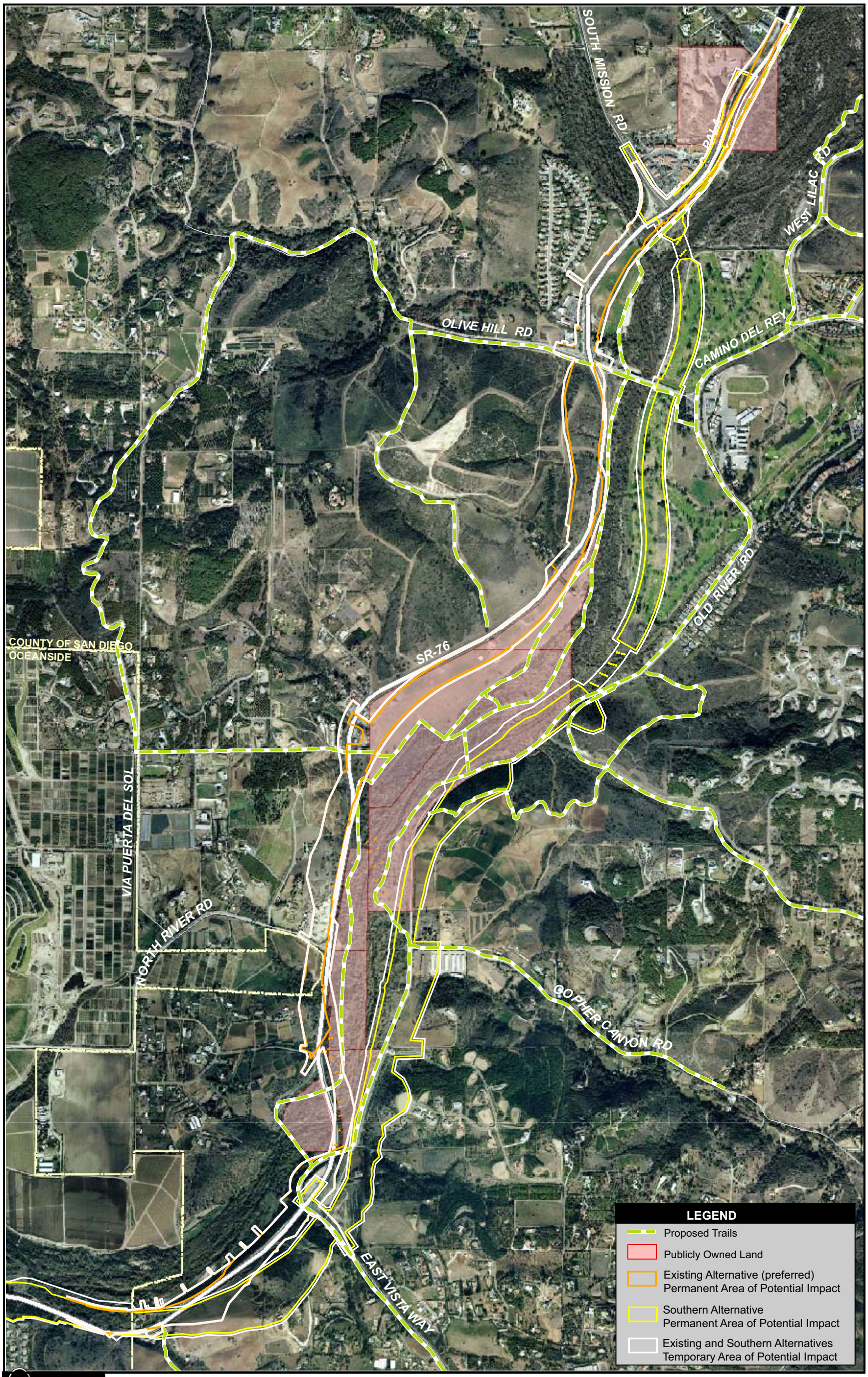


IMAGE SOURCE: AIRPHOTO USA, IMAGE DATE: JANUARY 2006

State Route 76 Corridor

Figure 7

Tier A & Tier B Sites within Zone 2 with Proposed Existing (preferred) and Southern Alignment Alternatives



76 State Route 76 Corridor

IMAGE SOURCE: AIRPHOTO USA, IMAGE DATE: JANUARY 2006

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0 250 500 1,000 Feet

Figure 8
Proposed Trails

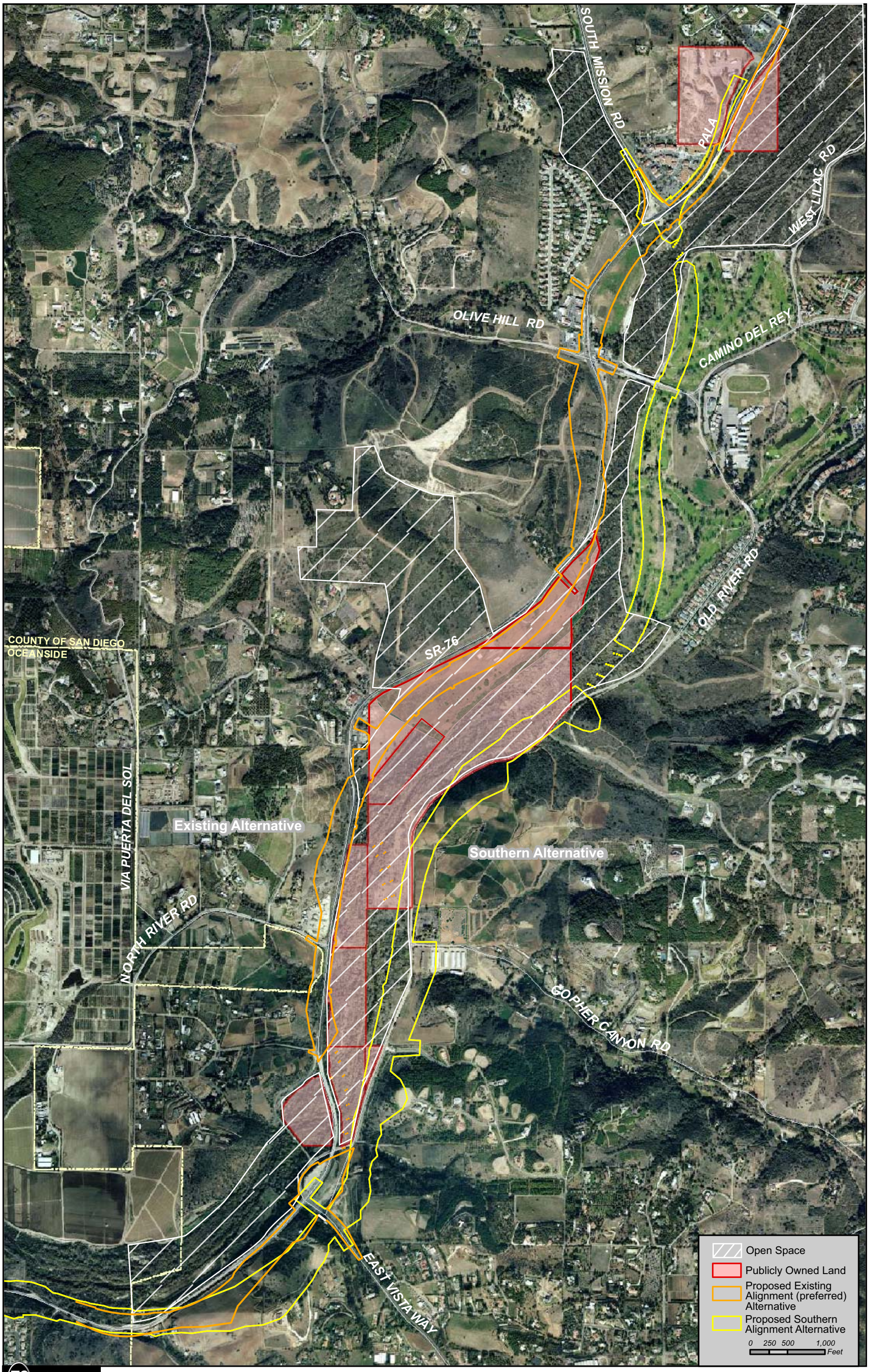
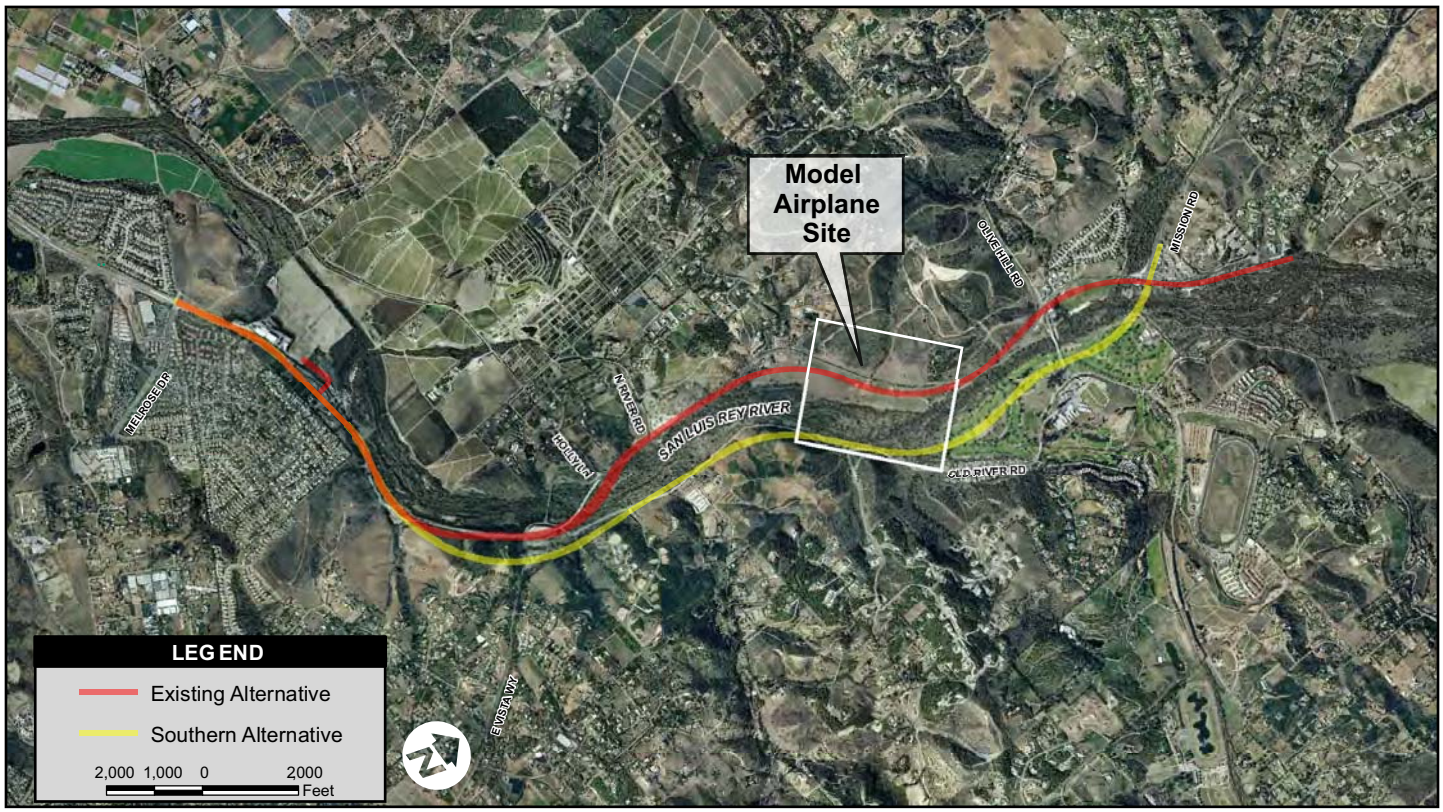


IMAGE SOURCE: AIRPHOTO USA, IMAGE DATE: JANUARY 2006

Figure 9

Open Space within Zone 2
with Proposed Existing (preferred) and Southern Alignment Alternatives



Source: AirPhotoUSA 2006; SanGIS 2007; Dokken Engineering 2006

Source: Google Earth 2007 imagery

State Route 76 Corridor

Figure 10
Bonsall Model Airplane Site

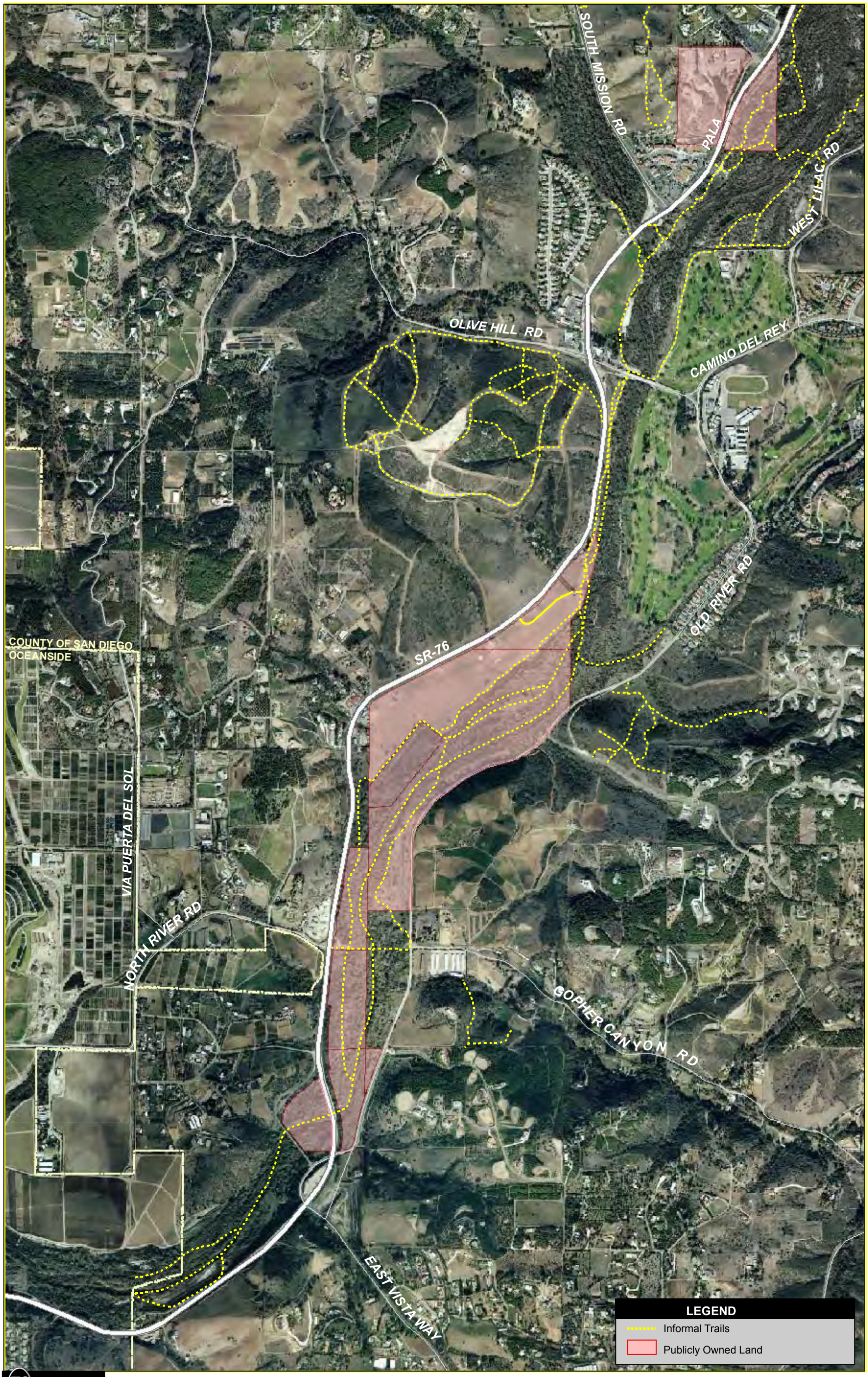
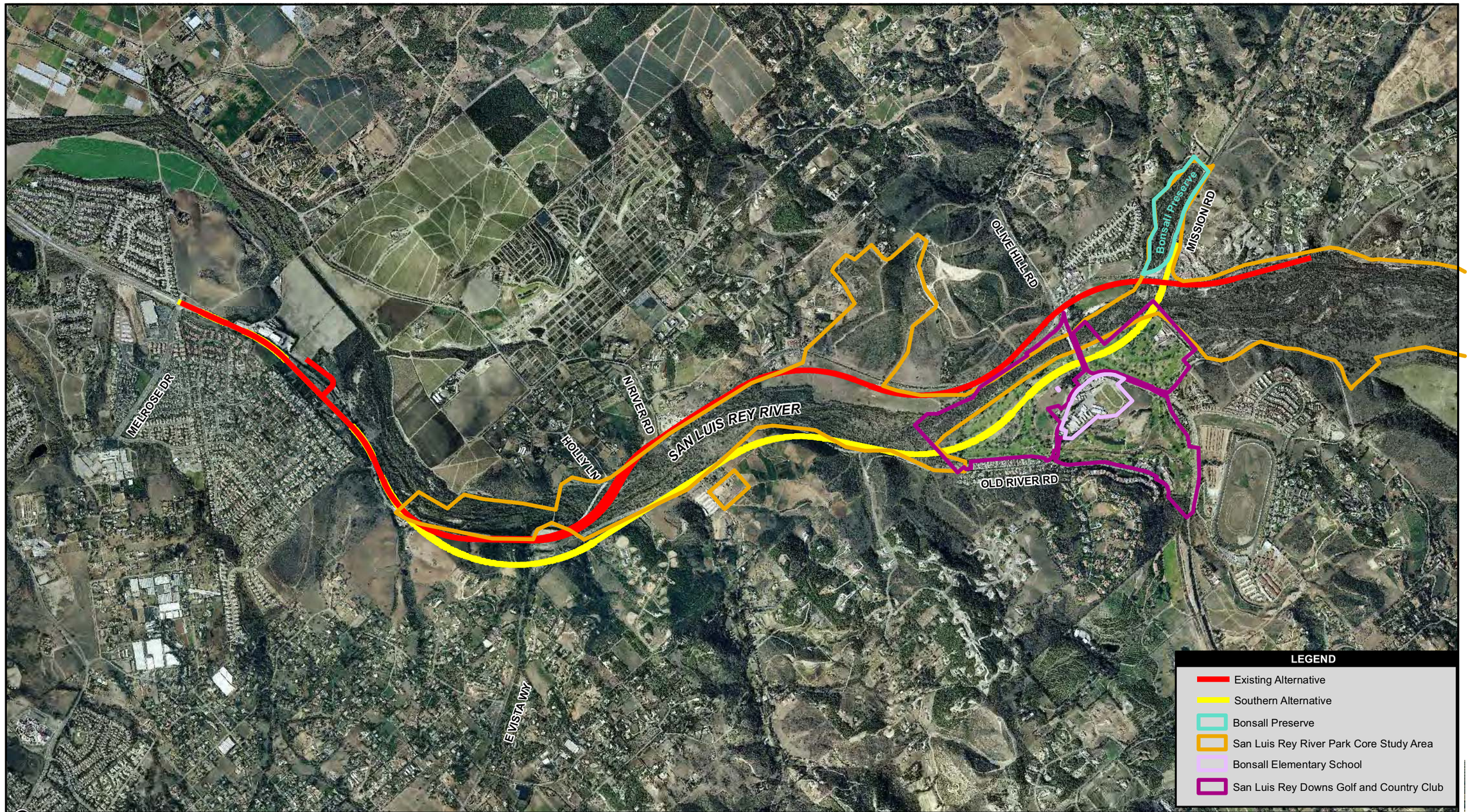


IMAGE SOURCE: AIRPHOTO USA, IMAGE DATE: JANUARY 2006

0 250 500 1,000 Feet

Figure 11
Informal Trails



76 State Route 76 Corridor

Source: AirPhotoUSA 2006; SanGIS 2007; Dokken Engineering 2006

2,000 1,000 0 2,000 Feet

Scale: 1:24,000; 1 inch = 2,000 feet

Figure 12

Other Recreational and Refuge Areas within Project Area

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APPENDIX B
TITLE VI POLICY STATEMENT

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
1120 N STREET
P. O. BOX 942873
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY (916) 653-4086

Flex your power!
Be energy efficient!

January 14, 2005

TITLE VI
POLICY STATEMENT

The California Department of Transportation under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, and age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

WILL KEMPTON
Director

"Caltrans improves mobility across California"

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APPENDIX C
IMPORTANT RELOCATION ASSISTANCE INFORMATION

APPENDIX C
IMPORTANT RELOCATION ASSISTANCE INFORMATION

The following explanation is general in nature and is not intended to be a complete statement of Federal and State relocation laws and regulations. Any questions concerning relocation should be addressed to the Department's Right of Way division.

Any persons to be displaced would be assigned to a relocation advisor, who would work closely with each displacee in order to see that all payments and benefits are fully utilized and that all regulations are observed, thereby avoiding the possibility of displaces jeopardizing or forfeiting any of their benefits or payments. At the time of the first written offer to purchase, owner-occupants are given a detailed explanation of the State's relocation services. Tenant occupants of properties to be acquired are contacted soon after the first written offer to purchase, and also are given a detailed explanation of the Department's Relocation Program. To avoid loss of possible benefits, no individual, family, business, farm or nonprofit organization should commit to purchase or rent a replacement property without first contacting a Department relocation advisor.

I. RELOCATION ASSISTANCE ADVISORY SERVICES

In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, the California Department of Transportation (the Department) would provide relocation advisory assistance to any person, business, farm or non-profit organization displaced as a result of the Department's acquisition of real property for public use. The Department would assist residential displacees in obtaining comparable decent, safe and sanitary replacement housing by providing current and continuing information on sales price and rental rates of available housing. Non-residential displacees would receive information on comparable properties for lease or purchase.

Residential replacement dwellings would be in comparable neighborhoods, at prices within the financial means of the individuals and families displaced, and reasonably accessible to their places of employment. Before any displacement occurs, displacees would be offered comparable replacement dwellings that are open to all persons regardless of race, color, religion, sex or national origin, and are consistent with the requirements of Title VI of the Civil Rights Act of 1964 and Title VIII of the Civil Rights Act of 1968. This assistance would also include supplying information concerning federal

and state assisted housing programs, and any other known services being offered by public and private agencies in the area.

II. RESIDENTIAL RELOCATION PAYMENTS PROGRAM

The Relocation Payment Program would help eligible residential occupants by paying certain costs and expenses. These costs are limited to those necessary for or incidental to the purchase or rental of the replacement dwelling and actual reasonable moving expenses to a new location within 50 miles of the displacement property. Any actual moving costs in excess of the 50 miles are the responsibility of the displacee. The Residential Relocation Program can be summarized as follows:

Moving Costs

Any displaced person, who lawfully occupied the acquired property, regardless of the length of occupancy in the property acquired, would be eligible for reimbursement of moving costs. Displacees would receive either the actual reasonable costs involved in moving themselves and personal property up to a maximum of 50 miles.

Purchase Supplement

In addition to moving and related expense payment, fully eligible homeowners may be entitled to payments for increased costs of replacement housing. Homeowners who have owned and occupied their property for 180 days or more prior to the date of the first written offer to purchase the property, may qualify to receive price differential payment and may qualify to receive reimbursement for certain nonrecurring costs incidental to the purchase of the replacement property. An interest differential payment is also available if the interest rate for the loan on the replacement dwelling is higher than the loan rate on the displacement dwelling, subject to certain limitations on reimbursement based upon the replacement property interest rate. The maximum combination of these three supplemental payments that the owner-occupant can receive is $22,500. If the total entitlement (without the moving payments) is in excess of $22,500, the Last Resort Housing Program would be used. See the explanation of the Last Resort Housing Program below.

Rental Supplement

Tenants who have occupied the property to be acquired by the Department for 90 days or more and owner-occupants of 90-179 days prior to the date of the first written offer to purchase may qualify to receive a rental differential payment. This payment is made when the Department determines that the cost to rent a comparable "decent, safe and sanitary" replacement dwelling would be more than the present rent of the displacement dwelling. As an alternative, the tenant may qualify for a down payment benefit designed to assist in the purchase of a replacement property and the payment of certain costs incidental to the purchase, subject to certain limitations noted below under the Down Payment section below. The maximum amount payable to any tenant of 90 days or more and any owner-occupant of 90-179 days, in addition to moving expenses, is $5,250. If the total entitlement for rental supplement exceeds $5,250, the Last Resort Housing Program would be used.

In addition to the occupant requirements, in order to receive any relocation benefits the displaced person must buy or rent and occupy a "decent, safe and sanitary" replacement dwelling within one year from the date the Department takes legal possession of the property, or from the date the displacee vacates the displacement property, whichever is later.

Down Payment

The down payment option has been designed to aid owner occupants of 90-179 days and tenants with no less than 90 days of continuous occupancy prior to the Department's first written offer. The down payment and incidental expenses cannot exceed the maximum payment of $5,250. The one-year eligibility period in which to purchase and occupy a "decent, safe and sanitary" replacement dwelling would apply.

Last Resort Housing

Federal regulations (49 CFR 24) contain the policy and procedure for implementing the Last Resort Housing Program on Federal-aid projects. Last resort housing benefits are, except for the amounts of payments and the methods in making them, the same as those benefits for standard residential relocation as explained above. Last resort housing has been designed primarily to cover situations where a displacee cannot be relocated because of lack of available comparable replacement housing, or when the anticipated replacement housing payments exceed the $5,250 and $22,500 limits of the standard relocation procedure, because either the displacee lacks the financial ability or other valid

circumstances. In certain exceptional situations, Last Resort Housing may also be used for tenants of less than 90 days.

Other Relocation Information

After the first written offer to acquire the property has been made, the Department would within a reasonable length of time, personally contact the displacees to gather important information, including the following:

- Preferences in area of relocation;
- Number of people to be displaced and the distribution of adults and children according to age and sex;
- Location of school and employment;
- Specific arrangements needed to accommodate any family member(s) special needs; and,
- Financial ability to relocate into comparable replacement dwelling, which would adequately house all members of the family.

III. THE NONRESIDENTIAL ASSISTANCE PROGRAM

The Business and Farm Relocation Assistance Program provides assistance to businesses, farms and nonprofit organizations in locating suitable replacement property, and reimbursement for certain costs involved in relocation. The Relocation Advisory Assistance Program would provide current lists of properties offered for sale or rent, suitable for a particular business's specific relocation needs. The types of payments available to eligible businesses, farms and nonprofit organizations are moving and searching expenses, and possibly reestablishment expenses or a fixed In Lieu payment instead of any moving, searching and reestablishment expenses. The payment types can be summarized as follows:

Moving Expenses

Moving expenses may include the following actual, reasonable costs:

- The moving of inventory, machinery, equipment and similar business-related property dismantling, disconnecting, crating, packing, loading, insuring, transporting, unloading, unpacking, and reconnecting of personal property.

- Loss of tangible personal property provides payment for actual, direct loss of personal property that the owner is permitted not to move.
- Expenses related to searching for a new business site, up to $2,500 for reasonable expenses actually incurred.

Reestablishment Expenses

Reestablishment expenses related to the operation of the business at the new location, up to $10,000 for reasonable expenses actually incurred.

In Lieu Payment

A fixed payment in lieu of moving and searching payments, and reestablishment payment may be available to businesses that meet certain eligibility requirements. This payment is an amount equal to the average annual net earnings for the last two taxable years prior to the relocation and may not be less than $1,000 nor more than $20,000.

IV. ADDITIONAL INFORMATION

No relocation payment received would be considered as income for the purpose of the Internal Revenue Code of 1954 or for the purposes of determining eligibility or the extent of eligibility of any person for assistance under the Social Security Act or any other federal law (except for any federal law providing low-income housing assistance).

Persons who are eligible for relocation payments and who are legally occupying the property required for the project would not be asked to move without being given at least 90 days advance notice, in writing. Occupants of any type of dwelling eligible for relocation payments would not be required to move unless at least one comparable "decent, safe and sanitary" replacement residence, open to all persons regardless of race, color, religion, sex or national origin, is available or has been made available to them by the state.

Any person, business, farm or non-profit organization, which has been refused a relocation payment by the Department, or believes that the payments are inadequate, may appeal for a hearing before a hearing officer or the Department's Relocation Assistance Appeals Board. No legal assistance is required; however, the displacee may choose to obtain legal council at his/her expense. Information about the appeal procedure is available from the Department's Relocation Advisors.

The information above is not intended to be a complete statement of all of the Department's laws and regulations. At the time of the first written offer to purchase, owner-occupants are given a more detailed explanation of the state's relocation services. Tenant occupants of properties to be acquired are contacted immediately after the first written offer to purchase, and also given a more detailed explanation of the Department’s relocation programs.

V. IMPORTANT NOTICE

To avoid loss of possible benefits, no individual, family, business, farm or non-profit organization should commit to purchase or rent a replacement property without first contacting a Department of Transportation Relocation Advisor at:

State of California
Department of Transportation, District #11
Right of Way Division, MS 310
4050 Taylor Street
San Diego, California 92110

APPENDIX D
ENVIRONMENTAL COMMITMENT RECORD

APPENDIX D
ENVIRONMENTAL COMMITMENT RECORD

In order to be sure that all of the mitigation measures identified in this document are executed at the appropriate times, the following mitigation program would be implemented.

The mitigation program would follow a three-phase sequence: design of the project, construction and post-construction/maintenance activities. During design and preparation of the contract plans, there would be periodic environmental review to make sure that the mitigation measures and other commitments are incorporated into the final project plans, specifications and cost estimates. A check would be made to determine that Caltrans has received all necessary resource agency permits, and that any additional conditions as specified in the permits are also included in the contract plans.

Prior to construction, field engineers and contract staff would hold meetings with Caltrans environmental division specialists who would identify environmental commitments and explain their background and importance. A preliminary environmental monitoring plan and schedule of field reviews by environmental staff for the duration of construction would be developed. The Resident field engineer would keep a list of names of environmental specialists who have expertise for the various environmental concerns, which may arise during construction activities. The contractor's Storm Water Pollution Prevention Plan would also be reviewed periodically during construction. Environmental staff would determine if environmental obligations or commitments to other agencies would be affected or if new impacts may result to ensure that compliance with these obligations is fulfilled and would review any proposed changes to the original contract plans. Project files would be maintained by Caltrans' environmental branch to document field reviews, monitoring reports, and actions taken to address changes in the construction contract.

After construction is completed, the executed mitigation measures would be maintained. Their effectiveness would be determined through timely monitoring by Caltrans environmental and landscape specialists, and Caltrans environmental engineering coordinator. Highway maintenance personnel would check that all drainage facilities, erosion control devices, irrigation systems and other installations related to environmental commitments are functioning as intended. Plantings would undergo an appropriate period of maintenance to ensure establishment and plant materials would be

replaced as necessary. The project environmental analyst would have a continuing coordination role during the final design and construction monitoring. A monitoring form, the Environmental Commitment Record (ECR), would be used as a checklist to track each measure or task, and to make sure that completion of all commitments during future phases of the project are completed. The proposed ECR appears on the following pages. The ECR identifies the appropriate staff and Department branch responsible for making sure that each mitigation measure is completed. The columns Action Taken, Task Completed, Remarks, and Environmental Compliance are blank at this stage; these columns would be filled out in the future as each of the mitigation measures and commitments are implemented.

ENVIRONMENTAL COMMITMENTS RECORD
STATE ROUTE 76 MELROSE TO SOUTH MISSION HIGHWAY IMPROVEMENT PROJECT

Environmental Generalist
Debra Soifer
Phone: 619-688-3106
Date: October 2008

File: 11-SD-76
KP: 11.7/21.1
EA: 080100

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
DESIGN KICK OFF	Project Management	Beginning of Phase I						
ENVIRONMENTAL PS&E REVIEW MEETING	Project Management Environmental	PS&E circulation						
PRE-CONSTRUCTION MEETING	Project Management Resident Engineer	Contract Award						
PRE-JOB MEETING	Project Management Resident Engineer	Pre-construction						
MID CONSTRUCTION MEETING	Project Management Resident Engineer	Construction						
DESIGN FEATURES MEMORANDUM	Project Management Resident Engineer	Post Construction						
ENVIRONMENTAL COMPLIANCE REVIEW	Project Management Biology Resident Engineer	Safety Review						
BIOLOGY								
Clearing and grubbing outside bird breeding season (February 15 to September 30) and toad breeding season (March 15 to July 31).	Resident Engineer Biology	Pre-construction						
A Biological Monitor shall be on-site during construction activities in or near ESAs, waters and wetland resources.	Biology	Construction						

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
Preconstruction bird and arroyo toad surveys to be conducted.	Biology	Pre-construction						
Shall a migratory bird nest be located, then designation of the location as an ESA may occur, and delay/restriction of project activities in that ESA until nesting/fledging is completed.								
Placement of ESA and exclusionary toad fencing as shown on the Plans prior to beginning construction and after May 1. This fencing is to be maintained throughout the construction period.	Resident Engineer Biology	Pre-Construction						
Any arroyo toads found within the construction site/outside of exclusionary toad fencing shall be moved by a qualified biologist and placed within the nearest suitable habitat.	Biology	Construction						
Directional fencing and wildlife undercrossings to be placed between the highway and the San Luis Rey River.	Biology Resident Engineer	Construction						
Prepare a Service approved Restoration Plan regarding arroyo toad habitat.	Biology	PA/ED						
Exotic plant removal outside of bird and arroyo toad breeding seasons (February 15 to August 31).	Resident Engineer Biology Stewardship	Pre-construction						
Permanent arroyo toad barrier fencing to be installed between highway and the San Luis Rey River.	Resident Engineer Biology	Construction						

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
Repairs to breaches in permanent toad fencing or wildlife fencing must occur before March 15, or within 1 week of discovery, if the breach occurs between March 15 and July 31.	Resident Engineer Biology	Construction						
Pile Driving will only be conducted between October 1 and February 14.	Resident Engineer	Construction						
All seeding/planting will occur on-site and involve replacement with in-kind/similar native species to the maximum extent practicable with seedmix reviewed by a qualified biologist.	Biology	Construction						
Night work lighting shall be focused on the roadway and directed away from ESAs, the San Luis Rey River and tributary creeks.	Resident Engineer	Construction						
Soils from construction grading and stockpiles to be located away from the San Luis Rey River.	Resident Engineer Biology	Construction						
ESA fencing to be installed around the locations of San Diego Ambrosia to ensure avoidance of the plants. There will be a 20 foot buffer between the plants and the ESA fencing.	Biology	Pre-construction						

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
Translocation and long term management of ambrosia from the Marron Mitigation site to Morrison following a Service approved plan.	Stewardship Biology	Post construction						
Staging and storage of construction equipment and materials to be located away from all stream channels.	Resident Engineer Biology	Construction						
No equipment maintenance shall be performed near the San Luis Rey River or tributary creeks. Maintenance shall be restricted to designated areas that are a minimum of 100 feet from ESAs.	Resident Engineer	Construction						
Compliance with the Biological Opinion from USFWS.	Resident Engineer Biology	Construction						
Compliance with 404 Permit conditions from ACOE.	Resident Engineer Biology	Construction						
Compliance with 401 Water Quality Certification conditions from RWQCB.	Resident Engineer Biology	Construction						
Compliance with 1602 Streambed Alteration Agreement conditions from CDFG.	Resident Engineer Biology	Construction						
Two-year plant establishment period.	Biology	Post Construction						
Five year plant maintenance, monitoring and reporting program.	Biology Stewardship	Post Construction						
WATER QUALITY								
Compliance with the NPDES Permit.	Resident Engineer	Construction						

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
Storm Water Management Plan shall be prepared.	Resident Engineer NPDES	Pre-construction						
Construction Best Management Practices (BMPs) to be utilized to limit runoff.	Resident Engineer NPDES	Construction						
Runoff shall not be allowed to enter the San Luis Rey River or tributary creeks.	Resident Engineer	Construction						
Implement standard engineering practices to facility drainage, where feasible.	Design	PA/ED						
Modifications to channel lining materials, including vegetation, geotextile mats, rock and riprap.	Design	PA/ED						
Energy dissipation devices at culvert outlets.	Design	PA/ED						
Smoothing the transition between culvert outlets/headwalls/wing walls and channels to reduce turbulence and scour.	Design	PA/ED						
Incorporate retention or detention facilities to reduce peak discharges	Design	PA/ED						
LAND USE								
Cooperation/Coordination with the County of San Diego and the city of Oceanside regarding land use compatibility conflicts.	Project Management Design	PA/ED						
Coordination with owners of golf course regarding reconfiguration due to impacts from the Southern Alignment Alternative.	Project Management Design	PA/ED						

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
CULTURAL RESOURCES								
Contractor shall hire a "qualified" prehistoric archaeological monitor.	Contractor Resident Engineer Cultural Resources	Construction						
Native American Monitor shall be on-site when construction activities are near areas with high potential for cultural resources.	Cultural Resources Resident Engineer	Construction						
Archaeologist to be invited to the preconstruction meeting	Resident Engineer Cultural Resources	Pre-construction						
Archaeological monitor shall be present during installation of ESA fencing.	Resident Engineer Cultural Resources	Pre-construction						
As shown on the Plans, no construction or related activities involving ground disturbance are allowed within ESA boundaries.	Resident Engineer Cultural Resources	Construction						
The Archaeological monitor shall be responsible for preparing a weekly summary of monitoring activities and transmit via e-mail to the RE and Department Archaeologist.	Resident Engineer Cultural Resources	Construction						
The Archaeological monitor shall have the authority to halt construction in the vicinity of archaeological find and shall immediately notify the RE and archaeologist to schedule a field meeting within 24 hours of notification.	Cultural Resources Resident Engineer	Construction						

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
Should human skeletal remains be encountered, construction activities within 20 meters (65 feet) shall be halted and not resumed until permitted in writing.	Resident Engineer Cultural Resources	Construction						
Should human skeletal remains be encountered, the Archaeologist shall notify the County Coroner, State Native American Heritage Commission, SHPO, FHWA and the appropriate local tribes.	Resident Engineer Construction Liaison Cultural Resources	Construction						
Treatment of skeletal remains shall be determined through consultation with the above agencies and individuals within two business days.	Construction Liaison Cultural Resources	Construction						
PALEONTOLOGY								
A qualified paleontologist to be invited to the preconstruction meeting regarding grading and excavation and field techniques and safety issues.	Resident Engineer Cultural Resources	Pre-Construction						
Paleontological monitor should be on-site full time during original cutting of previously undisturbed areas to inspect for contained fossils.	Resident Engineer Cultural Resources	Construction						
Paleontological monitor should spot-check the project corridor for older alluvium during grading activities.	Cultural Resources	Construction						

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
If fossils are discovered, the paleontologist or monitor should salvage the fossils.	Cultural Resources	Construction						
Should larger fossils be encountered, the paleontologist or monitor shall direct, divert or halt grading.	Cultural Resources	Construction						
Fossil remains collected during monitoring and salvage should be cleaned, repaired, sorted and cataloged.	Cultural Resources	Construction						
Prepared fossils, with copies of all pertinent field notes, photos, and maps should be deposited in a scientific instruction such as the San Diego Natural History Museum	Cultural Resources	Construction						
A final summary report outlining the results of the mitigation program that includes methods used, stratigraphic section exposed, fossils collection and significance should be completed.	Cultural Resources	Post-construction						
VISUAL								
Replacement planting where mature trees and shrubs are removed	Landscape Architect Resident Engineer	Construction						
Limit/shade lighting to prevent light scattering	Resident Engineer	Construction						
Use non-reflective surfaces or earth tone colors for lighting standards	Landscape Architect Resident Engineer	Post-construction						

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
Plant Palette to include native trees, shrubs and ground cover and other plants compatible with natives.	Landscape Architect Biology	PA/ED						
Enhanced paving at raised medians to incorporate less severe, more rural architectural colors, forms and treatments.	Landscape Architect Resident Engineer	PA/ED						
Barriers, railings and fencing to be compatible with scale and character of the rural area and to match other materials used on SR-76 Expressway.	Resident Engineer Landscape Architect	Construction						
Grading to reflect pregraded natural contours and cut slopes to be rounded, where feasible.	Resident Engineer Landscape Architect	Construction						
AIR QUALITY								
Construction equipment, staging and maintenance areas shall be located as far as possible from schools, active recreation and other areas of high population density.	Resident Engineer	Construction						
Water trucks shall be used to minimize dust	Resident Engineer	Construction						
Suspend grading and earth moving when wind gusts exceed 25 mph unless soil is wet enough to prevent dust plumes.	Resident Engineer	Construction						
Cover trucks when hauling dirt	Resident Engineer	Construction						
Limit vehicle paths on unpaved surfaces and stabilize temporary roads.	Resident Engineer	Construction						

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
Revegetate disturbed land, vehicle paths created for construction.	Resident Engineer Biology	Post-construction						
PARK AND TRAIL SITES								
Coordination with County of San Diego regarding planned San Luis Rey River Park Master Plan park locations.	Design Project Manager	PA/ED						
Coordination with County of San Diego regarding locations and connectivity to informal existing and planned trail locations.	Design Project Manager	PA/ED						
Reroute or reconnect trails impacted during construction.	Resident Engineer Design	Construction						
HAZARDOUS WASTE								
Health and Safety Plan for potential Hazardous Waste	Environmental Engineering	Pre-construction						
Dispose of soil containing hazardous materials such as petroleum hydrocarbons in a Class II or Class III landfill or reuse as fill beneath the roadway.	Resident Engineer Environmental Engineering							
Avoid groundwater near SR-76/Olive Hill Road	Resident Engineer	Construction						
SOCIOECONOMIC								
Traffic Control Plan shall be prepared	Design	Pre-construction						
Limit detours and roadway closures to non-peak hours.	Resident Engineer	Construction						
Establish pedestrian routes outside of construction zones	Resident Engineer	Construction						

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
If the bus stop is relocated, it shall be clearly identified and made accessible to pedestrians through safe walkways and connections to business and residential centers.	Resident Engineer	Construction						
Coordination with the public transportation authority regarding access to existing facilities.	Design Project Management Resident Engineer	Pre-Construction						
Post signs for directions to commercial centers.	Resident Engineer	Construction						
Maintain access routes to parking lots and neighborhoods	Resident Engineer	Construction						
Coordination/cooperation with County of San Diego regarding the San Luis Rey River Park Master Park Plan to minimize potential loss of golf course facilities from the Southern Alignment Alternative to maintain community character and cohesion by providing needed recreational gathering places within the region.	Design Project Management	PA/ED						
GEOLOGY								
All structures associated with the proposed project shall be designed to resist high earthquake acceleration	Design	PA/ED						
Implemen7t additional set back area from traveled way, rock bolts, slope drapes or rock fall barriers at steep slopes to prevent falling rock.	Resident Engineer	Construction						

PROJECT PERSONNEL CONTACT INFORMATION

PROJECT MANAGER: MARK PHELAN 619-688-6803
DESIGN MANAGER: CARL SAVAGE 619-688-
BIOLOGY: CHRIS WHITE 619-688-6998 or RUSH ABRAMS 619-688-0186
STEWARDSHIP: BRUCE APRIL 619-688-0107
LANDSCAPE ARCHITECT: STEVE ALVAREZ 619-688-2542 or JEFF BENTZ 619-220-5434

APPENDIX E
FARMLAND CONVERSION IMPACT RATING FORM

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 2/28/07	4. Sheet 1 of 1
1. Name of Project SR-76 Melrose to South Mission	5. Federal Agency Involved Federal Highway Administration	
2. Type of Project Highway Improvements Project	6. County and State San Diego, CA	
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 2/14/07	2. Person Completing Form C. Calvert
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☑ NO ☐	4. Acres Irrigated 69,537	Average Farm Size 80
5. Major Crop(s) Nursery, Flower, Fruit/Nut	6. Farmable Land in Government Jurisdiction Acres: 112,974 % 4	7. Amount of Farmland As Defined in FPPA Acres: 91,812 % 4
8. Name Of Land Evaluation System Used CA - Storie System	9. Name of Local Site Assessment System None	10. Date Land Evaluation Returned by NRCS 2/28/07

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	52	57		
B. Total Acres To Be Converted Indirectly, Or To Receive Services	206	178		
C. Total Acres In Corridor	258	235	0	0
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland	45	25		
B. Total Acres Statewide And Local Important Farmland	63	69		
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.04	0.02		
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	0.06	0.07		
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*	62.80	54.08		

PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points				
1. Area in Nonurban Use	15	14	14		
2. Perimeter in Nonurban Use	10	7	8		
3. Percent Of Corridor Being Farmed	20	0	1		
4. Protection Provided By State And Local Government	20	20	20		
5. Size of Present Farm Unit Compared To Average	10	1	2		
6. Creation Of Nonfarmable Farmland	25	0	3		
7. Availablility Of Farm Support Services	5	5	5		
8. On-Farm Investments	20	4	10		
9. Effects Of Conversion On Farm Support Services	25	0	0		
10. Compatibility With Existing Agricultural Use	10	5	5		
TOTAL CORRIDOR ASSESSMENT POINTS	160	56	68	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100				
Total Corridor Assessment (From Part VI above or a local site assessment)	160	56	68	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	56	68	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
This will be determined through the NEPA process	**258(A) or 235(B)**		YES ☐ NO ☑

5. Reason For Selection:

The selected alternative will be determined at at later date, based on a thorough analysis of all issue areas, including impacts to wetlands and biological resources, the local community, traffic, air/noise, and others.

Signature of Person Completing this Part: C Calvert DATE 2/28/07

NOTE: Complete a form for each segment with more than one Alternate Corridor

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

(1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?
More than 90 percent - 15 points
90 to 20 percent - 14 to 1 point(s)
Less than 20 percent - 0 points

(2) How much of the perimeter of the site borders on land in nonurban use?
More than 90 percent - 10 points
90 to 20 percent - 9 to 1 point(s)
Less than 20 percent - 0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?
More than 90 percent - 20 points
90 to 20 percent - 19 to 1 point(s)
Less than 20 percent - 0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?
Site is protected - 20 points
Site is not protected - 0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County ? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with $1,000 or more in sales.)
As large or larger - 10 points
Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

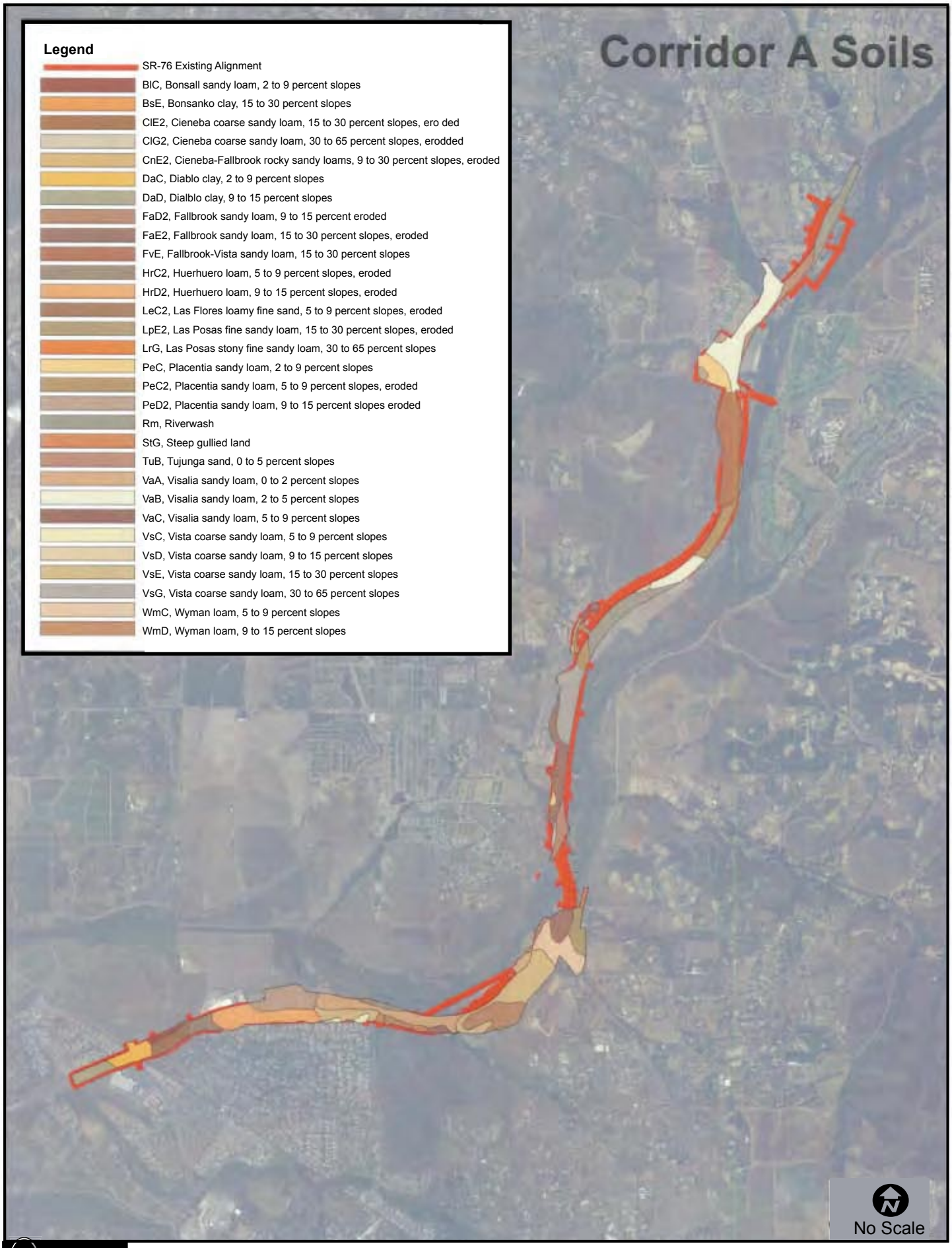
(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?
Acreage equal to more than 25 percent of acres directly converted by the project - 25 points
Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?
All required services are available - 5 points
Some required services are available - 4 to 1 point(s)
No required services are available - 0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?
High amount of on-farm investment - 20 points
Moderate amount of on-farm investment - 19 to 1 point(s)
No on-farm investment - 0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?
Substantial reduction in demand for support services if the site is converted - 25 points
Some reduction in demand for support services if the site is converted - 1 to 24 point(s)
No significant reduction in demand for support services if the site is converted - 0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?
Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points
Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points



76 State Route 76 Corridor

Figure 1
Corridor A Soils

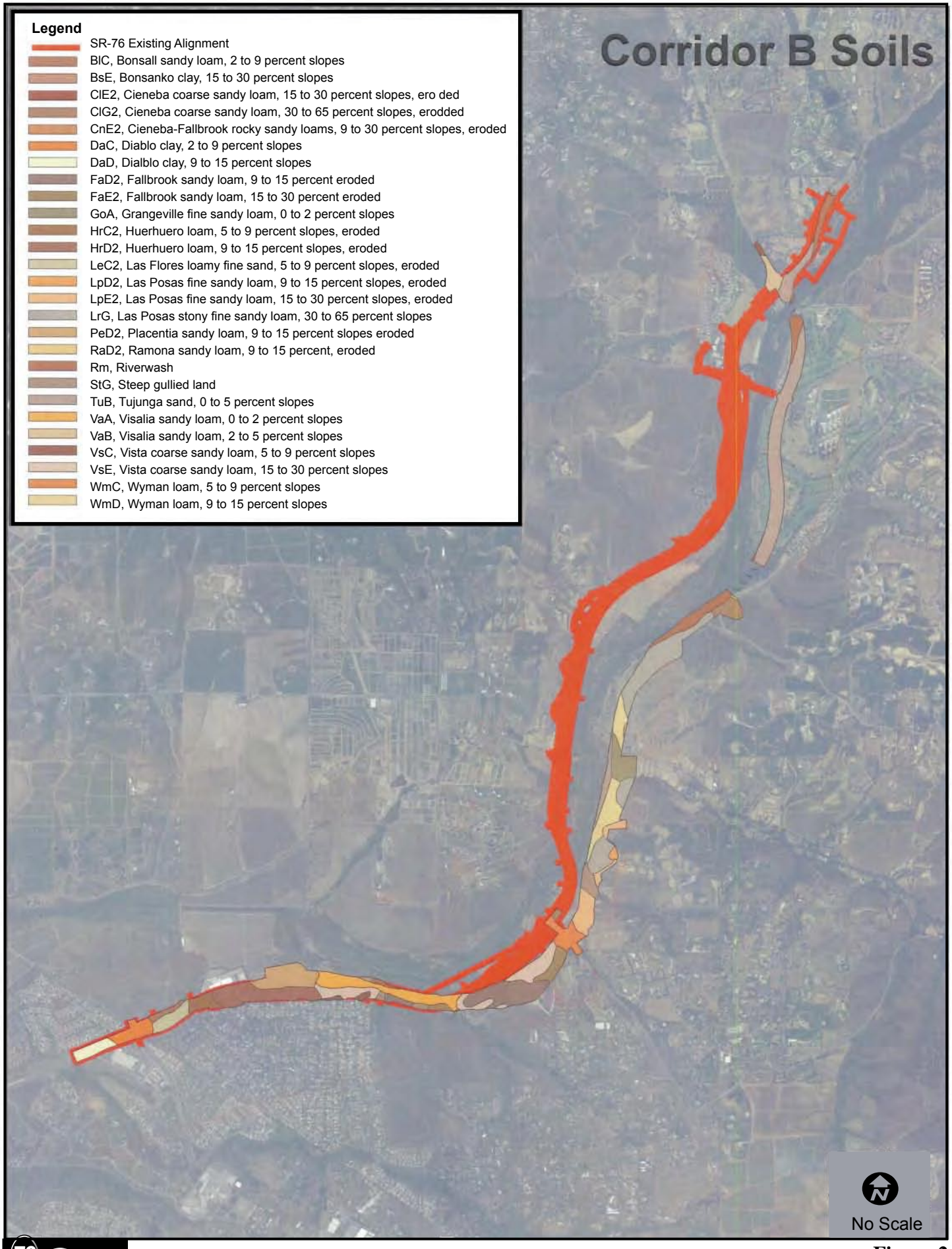
Soils Inventory Report

Corridor A

CALTRANS

Map Unit Symbol	Map Unit Name	Acres	Percent
BIC	Bonsall sandy loam, 2 to 9 percent slopes	1.9	1%
BsE	Bosanko clay, 15 to 30 percent slopes	0	0%
ClE2	Cieneba coarse sandy loam, 15 to 30 percent slopes, ero ded	0.2	0%
ClG2	Cieneba coarse sandy loam, 30 to 65 percent slopes, ero ded	0.7	0%
CnE2	Cieneba-Fallbrook rocky sandy loams, 9 to 30 percent sl opes, eroded	0	0%
DaC	Diablo clay, 2 to 9 percent slopes	6	2%
DaD	Diablo clay, 9 to 15 percent slopes	4.3	2%
FaD2	Fallbrook sandy loam, 9 to 15 percent slopes, eroded	12.3	5%
FaE2	Fallbrook sandy loam, 15 to 30 percent slopes, eroded	17.5	7%
FvE	Fallbrook-Vista sandy loams, 15 to 30 percent slopes	21.2	8%
HrC2	Huerhuero loam, 5 to 9 percent slopes, eroded	3.9	2%
HrD2	Huerhuero loam, 9 to 15 percent slopes, eroded	15.6	6%
LeC2	Las Flores loamy fine sand, 5 to 9 percent slopes, erod ed	5	2%
LpE2	Las Posas fine sandy loam, 15 to 30 percent slopes, ero ded	5.3	2%
LrG	Las Posas stony fine sandy loam, 30 to 65 percent slope s	0	0%
PeC	Placentia sandy loam, 2 to 9 percent slopes	6.8	3%

PeC2	Placentia sandy loam, 5 to 9 percent slopes, eroded	10.1	4%
PeD2	Placentia sandy loam, 9 to 15 percent slopes, eroded	13.6	5%
Rm	Riverwash	23.2	9%
StG	Steep gullied land	2.3	1%
TuB	Tujunga sand, 0 to 5 percent slopes	12.1	5%
VaA	Visalia sandy loam, 0 to 2 percent slopes	16.6	6%
VaB	Visalia sandy loam, 2 to 5 percent slopes	27.4	11%
VaC	Visalia sandy loam, 5 to 9 percent slopes	0.6	0%
VsC	Vista coarse sandy loam, 5 to 9 percent slopes	1.5	1%
VsD	Vista coarse sandy loam, 9 to 15 percent slopes	0.6	0%
VsE	Vista coarse sandy loam, 15 to 30 percent slopes	25.5	10%
VsG	Vista coarse sandy loam, 30 to 65 percent slopes	12.7	5%
WmC	Wyman loam, 5 to 9 percent slopes	11	4%
WmD	Wyman loam, 9 to 15 percent slopes	0	0%
	Total:	257.9	



State Route 76 Corridor

Figure 2
Corridor B Soils

Soils Inventory Report

Corridor B

CALTRANS

Map Unit Symbol	Map Unit Name	Acres	Percent
BlC	Bonsall sandy loam, 2 to 9 percent slopes	1.9	1%
BsE	Bosanko clay, 15 to 30 percent slopes	0	0%
ClE2	Cieneba coarse sandy loam, 15 to 30 percent slopes, ero ded	0.7	0%
ClG2	Cieneba coarse sandy loam, 30 to 65 percent slopes, ero ded	4.1	2%
CnE2	Cieneba-Fallbrook rocky sandy loams, 9 to 30 percent sl opes, eroded	0	0%
DaC	Diablo clay, 2 to 9 percent slopes	6	3%
DaD	Diablo clay, 9 to 15 percent slopes	4.3	2%
FaD2	Fallbrook sandy loam, 9 to 15 percent slopes, eroded	16.3	7%
FaE2	Fallbrook sandy loam, 15 to 30 percent slopes, eroded	6.2	3%
GoA	Grangeville fine sandy loam, 0 to 2 percent slopes	6.9	3%
HrC2	Huerhuero loam, 5 to 9 percent slopes, eroded	3.9	2%
HrD2	Huerhuero loam, 9 to 15 percent slopes, eroded	15.6	7%
LeC2	Las Flores loamy fine sand, 5 to 9 percent slopes, erod ed	5	2%
LpD2	Las Posas fine sandy loam, 9 to 15 percent slopes, erod ed	0.8	0%
LpE2	Las Posas fine sandy loam, 15 to 30 percent slopes, ero ded	9.9	4%
LrG	Las Posas stony fine sandy loam, 30 to 65 percent slope s	27.3	12%

PeD2	Placentia sandy loam, 9 to 15 percent slopes, eroded	11.8	5%
RaD2	Ramona sandy loam, 9 to 15 percent slopes, eroded	0.2	0%
Rm	Riverwash	15	6%
StG	Steep gullied land	4.7	2%
TuB	Tujunga sand, 0 to 5 percent slopes	39.6	17%
VaA	Visalia sandy loam, 0 to 2 percent slopes	14.1	6%
VaB	Visalia sandy loam, 2 to 5 percent slopes	3.7	2%
VsC	Vista coarse sandy loam, 5 to 9 percent slopes	1.5	1%
VsE	Vista coarse sandy loam, 15 to 30 percent slopes	15.7	7%
WmC	Wyman loam, 5 to 9 percent slopes	6.5	3%
WmD	Wyman loam, 9 to 15 percent slopes	13.4	6%
	Total:	235.1	

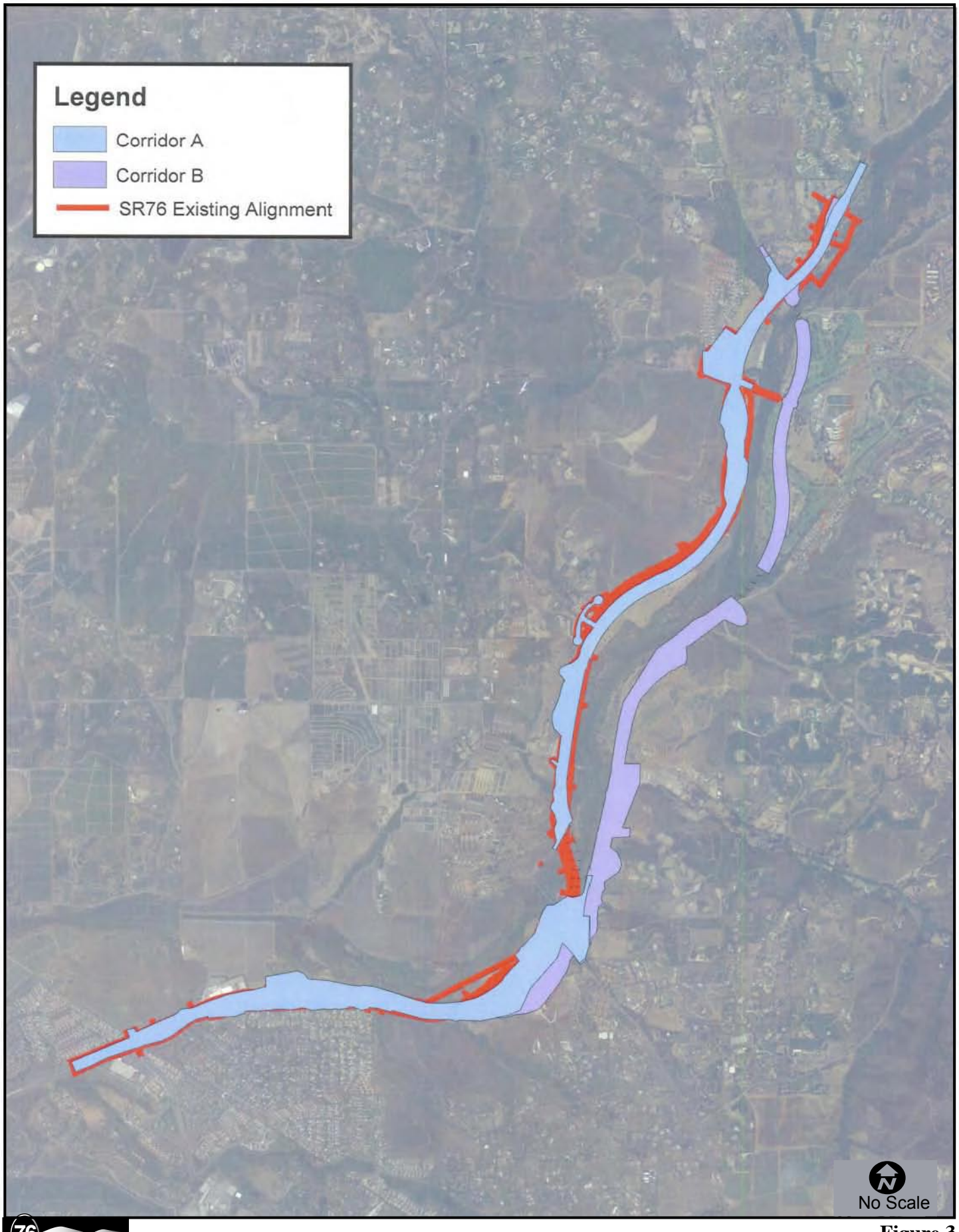


Figure 3
Corridors A and B

IMAGE SOURCE: AIRPHOTO USA, IMAGE DATE: JANUARY 2006

No Scale

Figure 4
Project Location Map

APPENDIX F
SECTION 404 ALTERNATIVES ANALYSIS/LEDPA

(This appendix has been added since public review of the Draft EIR/EIS)

APPENDIX F
SECTION 404(b)(1) ALTERNATIVES ANALYIS EVALUATION AND LEDPA IDENTIFICATION

INTRODUCTION

The California Department of Transportation (Caltrans), in coordination with the Federal Highway Administration (FHWA), is proposing to widen and realign approximately 9.3 kilometers (5.8 miles) of State Route 76 (SR-76) from Melrose Drive to South Mission Road in northern San Diego County, California. The project would construct four lanes with right-of-way and grading to accommodate future widening when justified.

The purpose of the proposed project is to maintain or improve the existing and future traffic operations in the SR-76 corridor, between Melrose Drive and South Mission Road. Since this purpose presumably could be achieved without affecting the special aquatic sites associated with the San Luis Rey River, the project is non-water dependent.

The overall purpose of the project is to:

- Maintain or improve future traffic levels of service in 2030 over the existing levels of service;
- Maintain or improve travel times within the corridor;
- Provide a facility that is compatible with future transit and other modal options;
- Provide consistency with the San Diego Regional 2030 Transportation Plan (RTP), approved in 2007 by the San Diego Association of Governments (SANDAG), where feasible and in compliance with federal and state regulations;
- Maintain the facility as an effective link in the intraregional and interregional movement of people and goods; and,
- Protect and/or enhance the human and natural environment along the SR-76 corridor.

ALTERNATIVES DEVELOPMENT

Resource Agency Meeting Decisions on Alternatives

Because this project would have five or more acres of permanent impacts to waters of the United States and requires a NEPA Environmental Impact Statement (EIS), the NEPA/404 MOU Integration Process applies. In September 2005, Caltrans began coordination with the resource agencies, including the U.S. Army Corps of Engineers (ACOE), U.S. Fish and Wildlife Service (USFWS), Environmental Protection Agency (EPA), and FHWA (along with California Department of Fish and Game [CDFG] and the Regional Water Quality Control Board

[RWQCB]) to implement the NEPA/Section 404 MOU Integration Process for the SR-76 Melrose to South Mission highway improvement project. NEPA/404 meetings were held bi-monthly between September 2005 and December 2006. The proposed project's Purpose and Need, Selection Criteria, and Range of Alternatives were developed and refined during these meetings in order to minimize impacts to biological resources. Caltrans will continue to work closely with all of the resources agencies to maintain communication and coordination throughout the development of the proposed project.

Two build alternatives and the No Build Alternative were presented and proposed for further detailed study as part of the Draft EIR/EIS. The resource agency representatives concurred that these three alignment alternatives were sufficient for the Draft EIR/EIS and could be carried forward for further detailed study. No further alternatives were suggested by the agencies.

Alternatives Considered Prior to the DEIR/DEIS and Withdrawn From Further Consideration

The alternatives described in this section were developed and evaluated in coordination with ACOE, USFWS, EPA, UFWS, CDFG, and RWQCB, as described above. Each of these alternatives was planned and designed only to the point where sufficient deficiencies to eliminate it from further consideration became obvious. Usually, this stage of design consisted of rough cost estimates, preliminary operational analysis, and design of routes consisting principally of highway width and alignment. This limited design development did not allow for quantitative calculation of the effects on jurisdictional areas from grading, bridge construction, best management practices (BMPs) for stormwater discharge, design of bridges, and similar details. With the concurrence of the participating agencies, each was then withdrawn from consideration, and no further design effort was conducted. Work continued only on the three alignment alternatives that would be carried forward in the Draft EIR/EIS.

Split Facility Alternative

This alternative would have split SR-76 and routed westbound traffic north of the San Luis Rey River and eastbound traffic south of the river, adversely affecting existing wildlife corridors by creating an island atmosphere around the river and possibly increasing fatalities of animals trying to access the river basin. The nine bridges that would have been required would have increased the project's cost and the environmental impacts to the river. This alternative was rejected because it would have required out-of-direction travel, and so would not have met the purpose and need, and would have required an additional structure crossing the San Luis Rey River. It was also rejected because of the severe impacts to the San Luis Rey River, operational deficiencies, and impacts to biological resources including coastal sage scrub, riparian woodlands, existing wildlife movement corridors, and other sensitive wildlife habitats within the San Luis Rey River basin.

Wetland Avoidance Alternative

A Wetland Avoidance Alternative was initially explored; however, as explained below, it would have had substantial impacts to the social and natural environment that are otherwise minimized

and/or avoided by the Existing Alignment Alternative, it would have had considerable engineering and construction challenges, and it would have been extremely costly. For these reasons, the Wetlands Avoidance Alternative was not pursued further and it was withdrawn from consideration. Once it was recognized that pursuing a Wetlands Avoidance Alternative was not a viable option, efforts were focused on minimizing the impacts of the two viable design alternatives.

The Wetlands Avoidance Alternative would have required an alignment farther outside the San Luis Rey River corridor, particularly in those areas along the river where the Existing Alignment Alternative impacts wetlands and at its proposed bridge crossings where piers must be placed in the river. With respect to the crossing of the San Luis Rey River, the Existing Alignment Alternative's new eastbound bridge is designed to be roughly adjacent to the existing concrete box girder San Luis Rey River Bridge. Similar to the existing bridge, the new bridge is proposed as a curved structure to cross the river in a shorter distance by crossing at more of a right angle. This new curved bridge would require pier supports (within wetland areas) spaced approximately 40 meters (130 feet) apart. There would be two columns at each support. These center supports would have a small permanent impact in the wetland, as most of the work is underground and each column is only 2.4 to 3.0 meters (8-10 feet) in diameter. To avoid this wetland impact completely, a different type of bridge would have been required.

Different bridge types would have been able to span a greater distance between supports, including a cable stay, a suspension, or a metal truss structure. Each of these would have allowed for larger spans than the proposed bridge structure; however, these types of structures must be constructed on a straight alignment, unlike the current bridge and the proposed alignment. Because of the technical nature of the construction, cable stay and suspension bridges are extremely costly to design and build, and construction time would have taken two to three years, as compared to nine months with the proposed bridge structure. Also, with construction of a straight bridge structure as a new eastbound structure, the existing structure, used for westbound traffic, would remain. Visually, this would have highly incongruent. In addition, bridges of this type require highly technical engineering practices and are not typically used for relatively small, rural crossings such as this. These bridge types require massive structures that would be out of context in this rural setting, particularly adjacent to the existing box girder structure. In contrast, such bridges are much more appropriately used in a different context such as a very large water body.

In order to accomplish a straight crossing rather than the curved structure currently proposed, the alignment would have needed to be realigned for hundreds of meters (thousands of feet) in each direction to achieve safe curve radii. This would have created a structure substantially longer than what is currently proposed (the proposed bridge is approximately 520 meters (1700 feet) long; depending on the realignment, a doubling of that length could be anticipated). Also, to obtain the straight alignment at the approaches, the road located west and east of the crossing would have needed to be realigned.

Realigning the roadway west and east of the proposed crossing would have had a number of additional impacts to resources that are currently avoided by the proposed project. Realignment of the roadway on the north side of the river would have reduced access to local intersections

along the current SR-76 alignment, such as Holly Lane and North River Road, thereby increasing out-of-direction travel time for residents as they access SR-76. In addition, this scenario would have had additional community impacts, as it would have required the relocation of residences at Jeffries Ranch and Mission Meadows and businesses along SR-76 near Via Montellano. Sensitive environmental resources that are otherwise avoided and/or minimized by Existing Alignment Alternative would also be impacted, such as upland habitats (e.g., coastal sage scrub), riparian habitats (e.g., southern coast live oak woodland and southern cottonwood willow riparian forest), highly sensitive cultural sites (which are also Section 4(f) resources), and threatened and endangered species, such as ambrosia, California gnatcatcher, arroyo toad, and southwestern willow flycatcher. The increase in required cut slopes to realign the roadway into steep hillside areas currently avoided would have also created extremely visible scars on the hillside, specifically southwest of East Vista Way, resulting in additional visual impacts to the community. These cuts would also have resulted in excess material requiring export, a project cost that is currently avoided because the project has been designed to balance cut and fill needs.

In sum, the a wetlands avoidance crossing would have increased the project footprint, increased project impacts, substantially increased the project cost, and extended the design and construction schedule. In rough figures, a suspension bridge would add $100 million to the cost of this alternative; increased grading and right-of-way costs would add perhaps $50 million; and overall, this alternative is estimated to at least double the current capital cost of $180 million. Therefore, although a Wetland Avoidance Alternative is available, it was withdrawn from further consideration as it is not practicable and, because it impacts a number of highly sensitive resources that are avoided by the viable build alternatives, is not less environmentally damaging.

The Groves Variation

In response to a request from the USFWS to move the Existing Alignment Alternative near Olive Hill Road farther west of the San Luis Rey River, Caltrans investigated a variation to the Existing Alignment Alternative. Two options to this variation were examined: the Bridge Option and the At-Grade Option. Both options were eliminated from further study based on engineering and environmental factors.

Under the Bridge Option, the Existing Alignment Alternative would have traveled up and over the Groves Hill adjacent to SR-76 and southwest of Olive Hill Road with a bridge at Olive Hill Road. A diamond interchange would have been required at Olive Hill Road. The Bridge Option could not have been built to Caltrans and FHWA geometric standards without providing alternatives for local access. It would result in cost increases of an estimated $20 million to $40 million and a substantially longer schedule than other build alternatives. This option would have dramatically altered the community nature of downtown Bonsall, would have had increased impacts to biological resources and impacts to historic properties, and would have used Section 4(f) resources avoided by the Existing Alignment Alternative.

Under the At-Grade Option, the Existing Alignment Alternative would have cut through Groves Hill and constructed at-grade intersections at Via Montellano, Olive Hill Road, and South Mission Road. This option was eliminated from further study and withdrawn from consideration based upon engineering and environmental factors. Cutting through Groves Hill would have

added approximately $41.5 million to the budget. The cut slopes produced by cutting into Groves Hill would have created an adverse visual impact. In addition, this option would have impacted historic properties and used Section 4(f) resources avoided by the Existing Alignment Alternative.

The EIR/EIS evaluated the No Build Alternative and two build alternatives, the Existing Alignment Alternative and the Southern Alignment Alternative. The Existing Alignment Alternative and the Southern Alignment Alternative are the practicable alternatives considered and evaluated in this analysis.

Another alternative identified in the EIR/EIS, the Transportation System Management and Transportation Demand Management Alternative, was eliminated from further evaluation because it would not meet the purpose and need for the project, but bus and bike lane features from this alternative were incorporated into the Existing Alignment Alternative and the Southern Alignment Alternative.

Alternatives Considered in the DEIR/DEIS

Existing Alignment Alternative

The Existing Alignment Alternative would expand the existing conventional highway to four lanes, with right-of-way and grading to accommodate a possible future widening when justified. The right-of-way requirement would be about 131 acres. Between Melrose Drive and South Mission Road the proposed alignment is primarily located along the existing roadway alignment but shifts north or south in specific locations where required to provide for more gradual curves or to accommodate widening. The San Luis Rey River Bridge would be retained as the future westbound structure. A new bridge for eastbound traffic would be constructed. The existing Bonsall Creek Bridge would be lengthened a sufficient distance to capture the alignment of the Existing Alignment Alternative. The existing Ostrich Farm Creek Bridge would be demolished and a new bridge would be constructed. The estimated cost of construction for the Existing Alignment Alternative is approximately $244.2 million: construction ($138 million), right-of-way ($54.2 million), and support ($52 million).

Southern Alignment Alternative

The Southern Alignment Alternative would widen and realign SR-76 from Melrose Drive to South Mission Road on an alignment south of the San Luis Rey River. As with the Existing Alignment Alternative, the facility would have four lanes, with right-of-way and grading to accommodate a possible future widening when justified. The total roadway length for this alternative is approximately 5.1 miles with a right-of-way requirement of approximately 366 acres. The Southern Alignment Alternative would require new bridges at Little Gopher Canyon Creek, Moosa Canyon Creek, and the South Mission Road crossing of the San Luis Rey River. The estimated cost of construction for the Southern Alignment Alternative is approximately $395 million: construction ($157 million), right-of-way ($164 million), and support ($62 million).

No Build Alternative

Under the No Build Alternative, no new SR-76 facilities would be constructed and the existing SR-76 would continue to serve as the principal access between Melrose Drive and South Mission Road. The No Build Alternative represents the option of no action. This alternative would not propose any changes to the existing number of lanes or the configuration of existing intersections along the corridor. With the No Build Alternative, traffic would continue to increase, causing longer delays and further degraded levels of service and would provide no additional facilities for bikes and pedestrians. The No Build Alternative would not meet the purpose and need for the project.

Identification of the NEPA Preferred Alternative

Prior to the release of the DEIR/DEIS, a Preferred Alternative was identified. After full consideration of the technical studies prepared, and based on public and resource agency input, the Existing Alignment Alternative was identified as the Preferred Alternative. Overall, it would have fewer impacts to biological resources, to the San Luis Rey River floodplain, and to the community than the Southern Alignment Alternative, and presents a more cost effective solution to the project purpose and need. The following factors were considered in the identification process.

- The SR-76 is recognized in local planning documents on the existing alignment, or the Existing Alignment Alternative. The Southern Alignment Alternative is inconsistent with local planning documents, as in some areas it adds an additional transportation element, not currently recognized on plans. Located south of the San Luis Rey River, the alignment would replace, in some places, Old River Road, an existing two-lane rural collector road.

- The Southern Alignment Alternative would have substantial adverse impacts to the San Luis Rey Downs Golf Course and would directly impact the clubhouse facilities. Though privately owned, the golf course is an important community and recreational focal point. This could displace the employees of the golf course and require the reconfiguration or relocation of the facility.

- The number of relocations of homes and businesses is about the same with either alternative. However, the right-of-way requirements for the Southern Alignment Alternative are greater, 148 hectares (366 acres), compared to 53 hectares (131 acres) for the Existing Alignment Alternative.

- The Southern Alignment Alternative impacts approximately 23.31 hectares (57.61 acres) of the San Luis Rey River floodplain. It would likely increase the water surface elevation of the river, up to 0.94 meter (3.0 feet), and Moosa Canyon Creek, up to 0.8 meter (2.62 feet). The increased flooding risk would be considered high. It could also increase the potential for incompatible floodplain development. For these reasons, it is considered to have a significant floodplain encroachment.

- The Southern Alignment Alternative would have greater impacts to wetlands, riparian vegetative communities, and related species than the Existing Alignment Alternative. Impacts to waters of the U.S. are approximately 2.62 hectares (6.48 acres) with the Southern Alignment Alternative compared to 0.75 hectares (1.83 acres) with the Existing Alignment Alternative. Permanent impacts to waters of the State with the Existing Alignment Alternative would total 6.6 hectares (16.35 acres). Total impacts to waters of the State with the Southern Alignment Alternative would be 11.1 hectares (27.45 acres). The Existing Alignment Alternative would have greater impacts to arroyo toad locations, upland species and related vegetative communities than the Southern Alignment Alternative.

- The Southern Alignment Alternative would present a greater constraint to wildlife movement through the area. Currently, Old River Road is a local rural road with low traffic volumes (4,000 ADT). Locating the highway south of the river means a wider barrier with much higher traffic volumes (32,000 ADT). In addition, existing SR-76 would remain in place and used for local traffic, with volumes predicted to be 11,700 ADT. The Southern Alignment Alternative would cross the river at Mission Road, which may further reduce the use of this important portion of a regional wildlife corridor. This new crossing, and the proximity of the alignment in the area of Little Gopher Canyon would have edge effects, reducing the width of the corridor. Overall, the Southern Alignment Alternative would be expected to have a greater impact to regional wildlife movement than the Existing Alignment Alternative.

- The Existing Alignment Alternative requires less earthwork than the Southern Alignment Alternative.

- The Existing Alignment Alternative is estimated to cost $244.2 million while the Southern Alignment Alternative is estimated to cost $395 million.

Design Considerations

Caltrans SR-76 Design Team supports the identification of the Existing Alignment Alternative as the Preferred Alternative because it meets the minimum design requirements and it fulfills the proposed SR-76 purpose and need.

Agency Comments Received on the Identification of the Preferred Alternative in the DEIR/DEIS

Prior to the public distribution of the DEIR/DEIS, during a July 18, 2008 NEPA 404 meeting Caltrans indicated its desire to identify the Existing Alignment Alternative as the Preferred Alternative in the DEIR/DEIS. None of the resource agencies objected. The identification was made and the DEIR/DEIS was distributed to the public for comment. All of the NEPA 404 resource agencies commented on the DEIR/DEIS and none voiced an objection to the identification of the Existing Alignment Alternative as the Preferred Alternative.

Design Iterations and Wetland Minimization Efforts

Between 2002 and 2007, the Existing Alignment Alternative was subject to multiple design iterations in a continuing effort to improve its design performance and minimize its impacts to

the environment, including waters and wetlands. The design iterations were given alpha/numeric labels, with the baseline alignment designated E-1 and the current design designated E-13.

Iteration E-1 depicted the general alignment footprint and did not include project features such as slope protection, drainage facilities, or flood protection structures. This basic design was engineered prior to consideration of the resources in the river area, with the primary purpose of providing a solution that modified the existing nonstandard curve radii and superelevation transitions while taking into account other design parameters. Absent the necessary project features mentioned above, E-1 would have permanently impacted 0.53 hectare (1.31 acres) of ACOE jurisdictional areas, including 0.23 hectare (0.59 acre) of wetlands and 0.29 hectare (0.72 acre) of other waters of the U.S.

Iterations E-2 through E-13 took the baseline established with E-1 through a design process with input from the PDT, which included an environmental component. Input from the ACOE, EPA, and USFWS was also solicited, and designs were modified as a result. As studies were completed and sensitive areas were established, the design was refined so as to avoid and/or minimize impacts to the sensitive areas. At times, it became necessary to increase impacts to one resource in order to avoid impacts to another. Therefore, impacts to waters and wetlands changed throughout the project development process. The specifics are provided below.

Iterations E-2 through E-7 focused only on the portion of the project between Melrose Drive and East Vista Way. These iterations included modification of the alignment by lowering the profile to reduce noise impacts to the residents of Jeffries Ranch, and shifting the alignment slightly north to minimize impacts to the Marron mitigation site and the 30-inch diameter natural gas line located just south of SR-76. These iterations also raised the vertical profiles to improve the geometry near East Vista Way and balanced the earthwork quantities by shifting the alignment to the south to generate more dirt (at this time the project needed fill material). E-7 also widened the northern hinge along the river so as to use the excess soil from a proposed mitigation site and avoid impacts to the Singh property's packing facility. These were minor changes and the biological impacts were not calculated.

Iterations E-8 through E-10 modified the alignment to avoid a hazardous waste site near Via Montellano by adjusting the curve alignment and moving the roadway to the south to avoid arroyo toad habitat. These iterations also improved the cross street connections by reducing intersection superelevation rates and included a utility corridor and a standard clear recovery zone. This iteration would have permanently impacted 1.28 hectares (3.18 acres) of ACOE jurisdictional areas including 0.35 hectare (0.87 acre) of wetlands and 0.93 hectare (2.31 acre) of waters.

Iteration E-9 was designed to avoid impacts to a historic property (and also a Section 4(f) property) site near Olive Hill Road by adjusting the roadway curve alignment slightly to the north in order to maintain the roadway continuity and connection at Olive Hill Road. This was a minor change and the biological impacts were not calculated.

Iteration E-10 was designed to minimize impacts to the floodplain and riparian habitat at Via Montellano. This iteration improved the cross street connections by reducing intersection

superelevation rates, and provided for a utility corridor and a standard clear recovery zone. It also improved the highway geometry through downtown Bonsall and minimized impacts to the floodplain approaching Sweetgrass Lane by shifting the alignment slightly to the north as much as practicable without impacting businesses in the River Village Shopping Center. This iteration would have caused permanent impacts to 1.06 hectares (2.36 acres) of ACOE jurisdictional areas, including 0.38 hectare (0.94 acre) of wetlands and 0.57 hectare (1.42 acres) of other waters of the U.S.

Iteration E-11 was designed to eliminate impacts to the floodplain and riparian habitat, as well as the need for rock slope protection from North River Road to just west of Via Montellano. This iteration was a minor change and the biological impacts were not calculated.

Iteration E-12 was designed to eliminate impacts to environmentally sensitive areas near Olive Hill Road. E-12 would have permanently impacted 1.06 hectares (2.63 acres) of ACOE jurisdictional areas, including 0.43 hectare (1.08 acres) of wetlands and 0.63 hectare (1.55 acres) of other waters of the U.S.

The current design iteration, E-13, further reduced wetland impacts and right-of-way impacts by designing steeper cut-slopes in several areas along the alignment, and by implementing the wildlife fences and crossings.

Design modifications were also performed for the Southern Alignment Alternative in iterations E-2 through E-6.

Rationale for the Need to Impact Wetlands in the Non-River Crossing Locations

The Existing Alignment Alternative would require impacts to wetland areas with the placement of rock slope protection along the southern side of SR-76, immediately adjacent to and north of the San Luis Rey River Bridge crossing where the alignment crosses downtown Bonsall. This impact cannot be feasibly avoided because the location of the roadway structure in the floodplain requires that it be protected from flood flows to prevent failure. Wetlands avoidance in the area would require that no slope protection be placed within the river. In order to provide a sound roadway structure, the roadway itself would therefore have to be shifted north out of the floodplain of the San Luis Rey River. East of the San Luis Rey River Bridge, this shift would result in the relocation of homes and businesses located along Holly Lane and North River Road. In addition, larger cut slopes would create a visual scar in the area, and the realignment could potentially impact the Groves Mitigation Site and Bonsall Preserve, which include sensitive habitat for the California gnatcatcher. A shift of the roadway north through downtown Bonsall would also result the in large-scale relocation of the River Village Shopping Center, the post-office, and a gas station. Relocation of these focal community facilities would not only result in the loss of these businesses, but would have a dramatic and highly adverse effect on the community cohesion and character of Bonsall. For these reasons, the alignment was not shifted north out of the river.

ALTERNATIVES ANALYSIS

Since the aquatic resource avoidance alternative is not practicable, and because the Existing Alignment Alternative and the Southern Alignment Alternative would result in some aquatic resource loss, the practicable alternative with the least damage to aquatic resources must be selected unless it has other significant adverse environmental consequences. The 404(b)(1) Alternatives Analysis below compares the impacts of each of the build alternatives and ultimately identifies the Existing Alignment Alternative as the LEDPA given that it has the least damage to aquatic resources, lacks other significant adverse environmental consequences, and lacks some specific substantial impacts associated with the Southern Alignment Alternative.

This Alternatives Analysis has been prepared in accordance with 40 CFR Part 230, Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (the Guidelines). It succinctly states and evaluates information regarding the effects of discharge of dredged or fill material into waters of the United States, including wetlands. As such, it is not meant to stand alone and relies heavily upon information provided in the FEIR/FEIS and on the Biological Assessment.

Section 404(b)(1) has as its purpose the restoration and maintenance of the chemical, physical, and biological integrity of the waters of the U.S. through the control of discharges of dredged and fill material. To fulfill this purpose, dredged or fill material should not be discharged into the aquatic ecosystem unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or cumulatively.

This analysis demonstrates that the project will comply with the purpose of the 404(b)(1) process, which is to restore and maintain the physical and biological integrity of waters of the U.S., and that the Existing Alignment Alternative is the LEDPA affecting the aquatic ecosystem that meets the project purpose. "Practicable" is defined as being "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose."

The wetlands of the San Luis Rey River corridor in the vicinity of the Existing Alignment Alternative have been defined by the ACOE as "special aquatic sites." Special aquatic sites, according to the guidelines, include sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes.

Guidelines Requirements

The Guidelines require that the project must be defined as water dependent or non-water dependent. The Guidelines define activities as "water dependent" if they require "access or proximity to or siting within a special aquatic site to fulfill the basic project purposes." If a Existing Alignment Alternative could achieve its purpose without being sited in a special aquatic site, it is non-water dependent. Under the Guidelines, non-water dependent, practicable alternatives not involving special aquatic sites are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.

For a non-water dependent action, it is the applicant's responsibility, through the 404(b)(1) Alternative Analysis, to show that alternatives avoiding special aquatic sites are not practicable, are not available, or are not less environmentally damaging. Furthermore, no discharge shall be permitted if it:

- violates any applicable state water quality standard;
- violates any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act;
- jeopardizes the continued existence of endangered or threatened species under the Endangered Species Act or results in likely destruction or adverse modification of designated critical habitat; or
- there is not sufficient information to determine compliance with the Guidelines.

The Guidelines also require the alternatives analysis to make factual determinations regarding:

- the physical substrate;
- water circulation;
- suspended particulate/turbidity;
- contaminants;
- the aquatic ecosystem and organisms;
- the proposed disposal site;
- cumulative effects on the aquatic ecosystem; and
- secondary effects on aquatic ecosystem.

Comparison of Practicable Alternatives

Upland Habitats

Table 1, adapted from Table 3.20-1 in the FEIR/FEIS, is a comparison of the impacts of the Existing Alignment Alternative, the Southern Alignment Alternative, and the No Build Alternative to upland vegetation communities.

Table 1
Impacts to Upland Vegetation Communities

Upland Vegetation Type	Impacts				
	No Build Alternative	Existing Alignment Alternative		Southern Alignment Alternative	
	Hectares (Acres) Impacted	Hectares (Acres) Impacted		Hectares (Acres) Impacted	
		Permanent	Temporary	Permanent	Temporary
Diegan Coastal Sage Scrub	0.00 (0.00)	9.86 (24.36)	1.66 (4.09)	10.29 (25.43)	1.77 (4.38)
Disturbed Diegan Coastal Sage Scrub	0.00 (0.00)	5.37 (13.28)	1.53 (3.77)	2.21 (5.45)	0.41 (1.02)
Coast Live Oak Woodland	0.00 (0.00)	0.29 (0.22)	0.02 (0.05)	0.49 (1.20)	0.09 (0.22)
Non-Native Grassland	0.00 (0.00)	17.47 (43.17)	4.31 (10.66)	9.70 (23.97)	2.26 (5.58)

The Existing Alignment Alternative would impact a greater acreage of upland habitat communities than the Southern Alignment Alternative because efforts were taken to avoid impacts to endangered species habitats of the least Bell's vireo, southwestern willow flycatcher, and arroyo toad, as well as wetlands, waters of the U.S., and riparian habitat.

Riparian and Wetland Communities

Table 2 compares the alternatives' impacts to riparian and wetland vegetation communities. Except for southern willow scrub, where impacts for both build alternatives would be quite small, the Existing Alignment Alternative permanently impacts less riparian and wetland community acreage than the Southern Alignment Alternative.

Table 2
Impacts to Riparian and Wetland Communities

Riparian and Wetland Community Type	Impacts				
	No Build Alternative	Existing Alignment Alternative		Southern Alignment Alternative	
	Hectares (Acres) Impacted	Hectares (Acres) Impacted		Hectares (Acres) Impacted	
		Permanent	Temporary	Permanent	Temporary
Southern Cottonwood Willow Riparian Forest	0.00 (0.00)	7.42 (18.33)	5.80 (14.32)	8.55 (21.13)	3.86 (9.53)
Disturbed Wetland	0.00 (0.00)	0.001 (0.003)	0.62 (1.54)	0.05 (0.12)	0.28 (0.70)
Southern Coast Live Oak Riparian Forest	0.00 (0.00)	1.25 (3.09)	0.00 (0.00)	1.94 (4.85)	0.00 (0.00)
Southern Willow Scrub	0.00 (0.00)	0.05 (0.13)	0.00 (0.00)	0.01 (0.02)	0.02 (0.04)
Mulefat Scrub	0.00 (0.00)	0.45 (1.11)	0.003 (0.007)	0.52 (1.29)	0.02 (0.05)
Coastal and Valley Freshwater Marsh	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.25 (0.63)	0.1 (0.25)

As noted above, because the Existing Alignment Alternative and the Southern Alignment Alternative include river crossings and were designed to completely avoid other highly sensitive resources adjacent to the river, some impacts to wetland and riparian communities and to waters of the U.S. are unavoidable. Table 3 depicts the impacts that would occur to waters of the U.S. and shows the Existing Alignment Alternative would impact less acreage of waters of the U.S.

Table 3
Impacts to Waters of the U.S.

Jurisdictional Area	Impacts				
	No Build Alternative	Existing Alignment Alternative		Southern Alignment Alternative	
	Hectares (Acres) Impacted	Hectares (Acres) Impacted		Hectares (Acres) Impacted	
		Permanent	Temporary	Permanent	Temporary
Wetlands*	0.00	0.55 (1.35)	1.55 (3.82)	2.27 (5.6)	3.4 (8.39)
Unvegetated Waters	0.00	0.17 (0.42)	0.18 (0.45)	0.23 (0.56)	0.35 (0.86)
Unvegetated Channel (Ordinary High Water Mark)	0.00	0.02 (0.06)	0.02 (0.04)	0.13 (0.32)	0.02 (0.05)
TOTALS	0.00	0.74 (1.83)	1.74 (4.31)	2.62 (6.48)	3.76 (9.30)

*Special aquatic sites

The total acreage of both permanent and temporary impacts to waters of the U.S. would be less for the Existing Alignment Alternative, compared to the Southern Alignment Alternative.

Both build alternatives would impact a number of drainages, streams, and creeks, as well as the San Luis Rey River, that are classified as waters of the U.S. All of these drainages are tributaries of the San Luis Rey River and are part of the river's hydrological and biological system. The drainages would be directly affected by construction, including the effects of cut and fill grading, placement of culverts where the road would pass over the drainages or streams, and construction of bridges. These drainages would also receive runoff from construction sites and from the completed roadway, bridges, and related features.

POTENTIAL IMPACTS ON PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM

Both build alternatives would impact a number of drainages classified as waters of the U.S. All of these drainages are part of the San Luis Rey River ecosystem. The drainages would be directly affected by construction, including the effects of cut and fill grading, placement of culverts where the road would pass over the drainages or streams, and construction of bridges.

The Existing Alignment Alternative would impact waters of the U.S. at the San Luis Rey River, Vista Creek, Bonsall Creek, Ostrich Farm Creek, and nine unnamed drainages. The Southern alignment would impacts waters of the U.S. at the San Luis Rey River, Vista Creek, Lower Gopher Canyon Creek, Ostrich Farm Creek, and five unnamed drainages. While fewer drainages

would be impacted by the Southern Alignment Alternative, a considerably greater total acreage of waters of the U.S. would be impacted by the Southern Alignment Alternative. Table 4 shows the drainages that would be impacted by discharge of fill into waters of the U.S. by the Existing Alignment Alternative and the classification and area of waters of the U.S. that would be impacted. Table 5 shows the same information for the Southern Alignment Alternative.

Table 4
Impacts to Waters of the U.S. by Drainage,
Existing Alignment Alternative

Drainage	Vegetation Type	Impacts (acres)	
		Permanent	Temporary
Drainage at PM 7.9	Wetlands	0.28	0
Drainage at PM 8.7	Unvegetated waters	0.002	0
Drainage at PM 8.8	Ordinary High Water Mark	0.06	0.010
Drainage at PM 8.9	Ordinary High Water Mark	0.003	0
Vista Creek, PM 9.3	Wetlands	0.066	0
	Unvegetated waters	0.09	0
Luis Rey River, PM 9.6	Wetlands	0.001	3.830
	Unvegetated waters	0	0.050
	Ordinary High Water Mark	0	0.010
Drainage at PM 10.0	Wetlands	0.36	0
	Unvegetated waters	0.06	0
Drainage at PM 11.1	Unvegetated waters	0.024	0
Drainage at PM 11.4	Wetlands	0.41	0
	Unvegetated waters	0.14	0
Bonsall Creek, PM 12.0	Unvegetated waters	0.08	0.020
	Ordinary High Water Mark	0	0.020
Ostrich Farm Creek, PM 12.3	Wetlands	0.19	0
	Unvegetated waters	0.009	0.380
Drainage at PM 12.4	Wetlands	0.008	0
Drainage at PM 12.9	Wetlands	0.04	0
	Unvegetated waters	0.01	0
TOTAL		**1.83**	**4.32**

Table 5
Impacts to Waters of the U.S. by Drainage,
Southern Alignment Alternative

Drainage	Vegetation Type	Impacts (acres)	
		Permanent	Temporary
Drainage at PM 7.9	Wetlands	0.37	0.05
San Luis Rey River	Wetland	2.63	8.33
	Unvegetated waters	0	0.83
Drainage at PM 8.7	Unvegetated waters	0.01	0
Drainage at PM 8.8	OHWM	0.07	0
Drainage at PM 8.9	Ordinary High Water Mark	0.01	0
Vista Creek	Wetlands	0.08	0.02
	Unvegetated waters	0.10	0.02
Drainage south of Montrachet Street	Ordinary High Water Mark	0.11	0
Lower Gopher Canyon Creek	Wetlands	2.51	0
	Unvegetated waters	0.31	0
	OHWM	0.12	0.01
Drainage at Dentro De Lomas	Unvegetated waters	0.14	0
TOTAL		**6.46**	**9.26**

Substrate

As Table 3 shows, the Existing Alignment Alternative would permanently impact 0.75 hectare (1.83 acres) of waters of the U.S. Of this acreage, 0.55 hectare (1.35 acres) are special aquatic sites (wetlands). Because the impacts would consist of the placement of structural fill or bridge piers, functional wetland values would be fully eliminated on the impacted acreage. Aquatic vegetation, where present, would be permanently removed. Benthic organisms in these areas would be displaced or destroyed. The permanent impacts to substrate conditions would be irreversible.

The same types of impacts would occur from the placement of structural fill or bridge piers with the Southern Alignment Alternative, but in this case, 2.62 hectares (6.48 acres) of waters of the U.S. and 2.26 hectares (5.6 acres) of special aquatic sites would be permanently affected. Construction of either alternative, due to ground and vegetative cover removal, could result in scour, sedimentation, and increased rates or volumes of runoff, especially during construction, that could adversely alter the substrate downstream.

Impacts to wetlands from potential increases in human activity in the vicinity of SR-76 and runoff from new paved surfaces are expected to be minimal, because the project design would

preclude access to the wetlands from the expanded bridges and road improvements, and a drainage plan would be implemented to divert and filter all roadway runoff into the storm drain system.

In the following comparison of impacts, and in similar comparisons in other subsections, the impacts of the two build alternatives, each with the implementation of minimization measures, are compared. The No Action alternative is also assessed, but without assuming any minimization measures. Measures to minimize adverse effects are discussed in a later section of this analysis. The No Action alternative is also assessed, but without assuming any minimization measures. The severity of impacts in each case is assessed as a relative comparison between the alternatives.

Comparison of Substrate Impacts

Because the acreage of permanent impacts from the Existing Alignment Alternative on waters of the U.S. is about 45 percent of similar impacts from the Southern Alignment Alternative, permanent, direct substrate impacts may be described as moderate for the Existing Alignment Alternative, compared to severe impacts for the Southern Alignment Alternative. For both alternatives, these impacts would occur once but would be permanent and adverse.

The acreage of temporary impacts is also greater from the Southern Alignment Alternative. Construction acreage impacts would be the sum of permanent and temporary impacts; this sum would be 11.985 acres for the Existing Alignment Alternative and 15.72 acres for the Southern Alignment Alternative, or about 24 percent less for the Existing Alignment Alternative. The impacts would be described as severe for the Southern Alignment Alternative and moderate for the Existing Alignment Alternative. These impacts would occur once, during construction, and would be adverse.

Indirect or secondary impacts could result from roadway runoff and human activity from increased access to the wetlands. However, in the case of either build alternative, minimization measures would reduce these impacts to minor severity. They would be expected to be adverse but would seldom occur.

The No Action Alternative would have no increased temporary or permanent substrate impacts. However, indirect impacts would continue to occur, since the current roadway was constructed without BMPs to minimize runoff and with minimal access control. Substrate impacts would be considered severe, continually occurring, and adverse.

Water

The Existing Alignment Alternative would permanently remove 0.54 hectare (1.35 acres) of wetlands areas available for water circulation. The existing drainage patterns and flow characteristics outside this area of impact would not be substantially changed or adversely affected. Because the Existing Alignment Alternative alignment is primarily outside the traditional riparian extent of the San Luis Rey River, its impacts are predominantly edge effects. It would not fragment the wetlands and waters associated with the river. The 0.55 hectare (1.35

acres) of wetlands affected, compared to the total area of wetlands in the project area, 66.52 hectares (164.38 acres), means that the Existing Alignment Alternative would cause little perturbation of current water circulation patterns and flow or normal water fluctuations. Given that the majority of the waters that would be impacted by the Existing Alignment Alternative are located above the floodline, the smaller tributaries to the San Luis Rey River are avoided, as is the potential for an acute channelizing effect. This will help to maintain existing hydrologic conditions and the river's biological resources.

The Southern Alignment Alternative would encroach into 23.31 hectares (57.61 acres) of the San Luis Rey River and deposit approximately 1,617,034 cubic meters (2,115,000 cubic yards) of fill. Given this encroachment, the Southern Alignment Alternative would increase the water surface elevation of the San Luis Rey River up to three feet. This would be a significant floodplain encroachment and the risk associated with the probability of flooding is high. A base flood in the San Luis Rey River would have a backwater effect on Moosa Canyon Creek and increase the water surface elevation 0.80 meter (2.62 feet).

The Southern Alignment Alternative would have impacts on smaller tributaries to the San Luis Rey River that would be largely avoided by the Existing Alignment Alternative. These smaller tributaries would be impacted by having their temperature and flow characteristics altered. In addition, the Southern Alignment Alternative would result in substantial channelization since it would be located within the 25-year floodplain. The associated effective alteration of flow and fragmentation of the San Luis Rey River system would reduce aquatic habitat functions and values. Stream channelization affects the amount and duration of flooding and sedimentation, altering habitats and the composition of plant communities.

Comparison of Water Impacts

The Southern Alternative Alignment would have severe impacts on water because of relatively greater perturbation of current, water fluctuation, channelization, flooding, and effects on minor tributaries. In comparison, the Existing Alignment Alternative's impacts would be minor. In both cases, perturbation of current would be continuing and adverse. Water fluctuation, channelization, flooding, and impacts on tributaries would be adverse, continuing but intermittent depending on storm events, but would be associated almost entirely with the Southern Alignment Alternative. Moreover, the adverse effects are a result of design features and probably could not be appreciably minimized.

No physical changes would be associated with the No Action Alternative, and therefore no adverse changes from existing conditions would occur.

Suspended Particulates/Turbidity

With the inclusion of BMPs, the project would not substantially affect the water quality in the area on a long-term basis. Disturbance of wetlands during construction may create turbid conditions that could reduce light penetration in affected waters, adversely affecting aquatic organisms by lowering photosynthesis and primary aquatic system productivity and by affecting feeding activity for sighted organisms. Because of the increased amount of fill within the 25-

year floodplain, this effect would be more likely to occur for the Southern Alignment Alternative. Temporary BMPs (soil stabilization, sediment control, wind erosion control, tracking control, non-storm water management, and waste management and materials pollution control) would be implemented to contain both storm water and non-storm water discharges during construction of either alternative.

Upon completion of construction, all disturbed areas will be stabilized or restored under either the Existing Alignment Alternative or the Southern Alignment Alternative. During the project development process, expected storm water runoff onto the project site would be calculated and, where possible, appropriate control measures (such as gravel bag berms to stop concentrated flow and sediment) would be implemented to convey concentrated flows around or through the site in a manner that would not cause additional erosion. The statewide Storm Water Management Plan (SWMP) describes how Caltrans would comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) Permit (Order 99-06-DWQ).

During the design phase, as required by the SWMP, treatment BMPs (biofiltration by strips or swales, infiltration devices, detention devices, traction sand traps, media filters, multi-chamber treatment, wet basins, dry weather flow devices, and gross solid removal devices) would be incorporated in the project as appropriate. Treatment BMPs are selected based on the impairment of the receiving water body. If biofiltration (strips and /or swales) are selected, vegetated swales would be incorporated upstream of drain inlets to treat roadway runoff. As design progresses, the exact locations would be evaluated to determine if incorporation is feasible based on right-of-way or environmental constraints. None of these measures were employed during design and construction of the existing SR-76. Therefore, it is anticipated that the proposed treatment may contribute to water quality improvements in the San Luis Rey River, including wetlands, under ordinary circumstances.

Flooding caused by the encroachment of the Southern Alignment Alternative into the 25-year floodplain could cause excessive turbidity, carry debris and trash downstream, and possibly increase downstream sedimentation.

Comparison of Suspended Particulates/Turbidity Impacts

The Southern Alignment Alternative would have greater impacts on suspended particulates and turbidity, would be a significant floodplain encroachment, and create a greater likelihood of flooding. Implementation of BMPs could reduce suspended particulates and turbidity impacts during ordinary conditions to minor levels for either alternative, so that adverse effects would be minor but continually occurring during storm events. Sedimentation and turbidity caused by flooding and floodplain encroachment in the case of the Southern Alignment Alternative, however, could not be minimized and would be severe. Such a condition would usually occur in significant precipitation events.

The No Action Alternative would not change current conditions. No measures specifically designed to reduce suspended particulates in runoff from the roadway were included in the construction of existing SR-76. Conditions affecting the particulates and turbidity of runoff, however, are relatively stable but there are no structural controls, filters, or sedimentation

devices. These conditions are therefore considered moderate, adverse, and continuing, with a potential for more severe impacts depending on weather conditions.

Contaminants

During construction, fuels, oils, greases, solvents, coatings, debris, and other contaminants could be released and enter special aquatic sites both on and off the construction sites. Temporary BMPs (soil stabilization, sediment control, wind erosion control, tracking control, non-storm water management, and waste management and materials pollution control) would be implemented to contain contaminant-bearing storm water and non-storm water discharges during construction. Fill material would be tested for contaminants before being placed in any location on the project site.

Contaminants from operation of the facility are generally associated with by-products of motor vehicle use such as oils, greases, fuels, wear products, trash, and debris. Caltrans maintenance activities may also discharge contaminants such as petroleum products, sediments, trash and debris, metals, acidic/basic materials, nutrients, solvents, waste paint, herbicides, and pesticides. Many of these potential pollutants can be prevented from being discharged into and via the storm water drainage systems by selecting and implementing BMPs appropriate for the activity being conducted. Design Pollution Prevention BMPs are selected to reduce post-construction pollutant discharges and would be incorporated into project design.

Design Pollution Prevention BMPs are permanent measures that improve storm water quality after construction is completed. Design Pollution Prevention BMPs will be implemented in addition to treatment BMPs required as part of the SWMP described in the Suspended Particulates/Turbidity section above. These measures were not employed during the design and construction of existing SR-76.

Comparison of Contaminant Impacts

Both the Existing Alignment Alternative and the Southern Alignment Alternative would be required through permitting requirements to employ the most effective reasonable and feasible BMPs to reduce contaminant loadings of runoff discharged to the river system. Therefore, contaminants impacts of the two build alternatives, under usual circumstances, would be minor. But the Southern Alignment Alternative would increase the chance of flooding by encroaching significantly into the river floodplain and more severely disrupting flows in tributaries. Flooding during significant rainfall events could overwhelm BMPs and result in increased contaminant loads reaching the river. Any contaminants reaching the river would be adverse. Because of BMPs, the contaminant impacts of the Existing Alignment Alternative would be minor, but those of the Southern Alignment Alternative could be severe during flood events.

The Existing Alignment Alternative or Southern Alignment Alternative could result in beneficial impacts compared to existing conditions, with the exception of flooding associated with the Southern Alignment Alternative. The No Action Alternative would perpetuate existing conditions, and the comparative impacts would be severe (especially if persisting in perpetuity), continually occurring during precipitation events, and adverse.

POTENTIAL IMPACTS ON BIOLOGICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM

Threatened and Endangered Species

San Diego Ambrosia (*Ambrosia pumila*)

San Diego ambrosia is federally listed as endangered. A population of about 150 to 200 plants of this species is located immediately south of the both Existing Alignment Alternative and the Southern Alignment Alternative. Direct permanent and temporary impacts to San Diego ambrosia within the project limits are not anticipated; however, it could be potentially indirectly impacted by invasive plant intrusion, dust, and changes in water quality or hydrology. Although these indirect effects could result in the potential loss of species individuals, they are anticipated to be minimal. Based on the anticipated impacts, each alignment may affect, but is not likely to adversely affect, San Diego ambrosia, due to realignments to avoid the plant population and the project's incorporation of specific avoidance/minimization measures.

Southern California Steelhead (*Oncorhynchus mykiss)*

The southern California steelhead is a federally listed endangered species. The project occurs within the Distinct Population Segment of the steelhead, but is not within designated critical habitat for this species. No steelhead have been observed within the project area, therefore, there are no anticipated impacts from either alternative to steelhead individuals.

Permanent impacts resulting from the Existing Alignment Alternative would occur to 0.17 hectares (0.42 acres) of unvegetated waters and 0.55 hectares (1.35 acres) of wetlands, for a total of 0.72 hectares (1.77 acres) of potential steelhead rearing/breeding habitat and fish passage. Temporary impacts would occur to 0.18 hectares (0.45 acres) of non-vegetated waters and 1.55 hectares (3.82 acres) of wetlands, totaling 1.73 hectares (4.27) acres of fish habitat.

The Southern Alignment Alternative would result in permanent impacts 0.23 hectares (0.56 acres) of unvegetated waters and 2.26 hectares (5.6 acres) of wetlands, potential steelhead rearing/breeding habitat and fish passage, for a total of 2.49 hectares (6.16 acres) of potential steelhead rearing and breeding habitat and fish passage.

Either alternative would have permanent direct impacts to suitable habitat for the southern California steelhead. Besides direct impacts, the alternatives would have temporary and permanent indirect effects upon steelhead habitat due to the adverse edge effects created by project development, including non-native species intrusion, erosion and sedimentation, and pollution runoff, as well as permanent, indirect impacts from adverse shading effects due to the construction of bridges.

The Existing Alignment Alternative would have fewer impacts to potential rearing/breeding habitat and fish passage than the Southern Alignment Alternative.

Arroyo Toad (*Bufo californicus*)

The arroyo toad is federally listed as endangered. The Existing Alignment Alternative would result in permanent, direct impacts to three locations in the central and southwestern portions of the proposed alignment where arroyo toad breeding populations were documented in 1997 and 2001. In the northern portion of the alignment, the Existing Alignment Alternative would result in temporary, direct impacts to one breeding location where an arroyo toad breeding population was documented in 1996. The Existing Alignment Alternative would permanently impact 9.08 hectares (22.45 acres) and temporarily impact 6.50 hectares (16.08 acres) of riparian and wetland habitat types, potential breeding habitat for the arroyo toad. Indirect effects may occur to approximately 30.60 hectares (75.63 acres) of riparian and wetland habitat. These effects may include changes in water quality or hydrology, dust, and human intrusion. Upland habitats, which may be used for toad aestivation, include coastal sage scrub, nonnative grasslands, and agricultural lands. Permanent impacts to potential aestivation areas within 914 meters (3,000 feet) of known toad populations include 0.0002 hectare (0.005) acre of coastal sage scrub, 12.43 hectares (30.72 acres) of nonnative grasslands, and 15.18 hectares (37.52 acres) of agricultural land. Temporary impacts could occur to 1.05 hectares (2.61 acres) of coastal sage scrub, 4.75 hectares (11.75 acres) of nonnative grasslands, and 0.93 hectare (2.3 acres) of agricultural land.

The Southern Alignment Alternative would have permanent direct impacts to one location in the southwestern portion of the project area where an arroyo toad breeding population was documented in 1997. The Southern Alignment Alternative would not have temporary impacts to any documented arroyo toad locations. Permanent impacts would occur to 11.07 hectares (27.36 acres) of riparian and wetland habitat types, and temporary impacts to 4.55 hectares (11.25 acres) of potential breeding habitat for the arroyo toad. Indirect effects could occur to approximately 111.56 hectares (274.68 acres) of riparian and wetland habitat. Permanent impacts to potential toad aestivation areas within 914 meters (3,000 feet) of known toad populations include 21.00 hectares (51.9 acres) of coastal sage scrub, 11.33 hectares (28 acres) of nonnative grasslands, and 54.02 hectares (133.5 acres) of agricultural land. Temporary impacts could occur to 1.17 hectares (2.9 acres) of coastal sage scrub, 4.33 hectares (10.72 acres) of nonnative grasslands, and 10.50 hectares (25.95 acres) of agricultural land.

Either alternative is likely to adversely affect the arroyo toad. The direct removal of habitat could potentially contribute to the harm/harassment of individuals or populations. Additionally, indirect disturbance resulting from traffic noise and activities associated with the roadway could cause the loss of functioning habitat or potential "take" of the arroyo toad. Though impacts to the arroyo toad populations appear to be greater with the Existing Alignment, fewer permanent impacts to breeding habitat and aestivating habitat would occur than with the Southern Alignment Alternative.

Least Bell's Vireo (*Vireo bellii pusillus*) and Critical Habitat

The least Bell's vireo is federally and state listed as endangered. The Existing Alignment Alternative would result in temporary, direct impacts to a total of four pairs and five individual least Bell's vireo and one location where species reproductive status could not be determined. Temporary, direct impacts may occur to a approximately seven pairs and six individual vireos.

Indirect impacts would affect 12 pairs and 12 individuals of this species. The proposed project would result in permanent, direct impacts to 9.08 hectares (22.45 acres) and temporary impacts to 6.51 hectares (16.08 acres) of least Bell's vireo habitat.

The Southern Alignment Alternative would have permanent direct impacts to four documented pairs of least Bell's vireo and two individuals. Temporary direct impacts would occur to three locations where least Bell's vireo pairs were documented in the central portion of the alignment area in 2004 and in the northern portion of the alignment in 2002. Permanent impacts would occur to 3.5 hectares (8.57 acres) of critical habitat, and temporary impacts to 1.6 hectares (3.87 acres). Indirect effects may occur to approximately 111.16 hectares (274.68 acres) of riparian and wetland habitat.

Either build alternative alignment is likely to adversely affect the least Bell's vireo. The direct removal of federally designated critical habitat could potentially contribute to the harm/harassment of individuals or populations. Additionally, indirect disturbance resulting from traffic noise and activities associated with the roadway could cause the loss of functioning habitat or potential "take" of the vireo. Impacts to the vireo individuals appear to be greater with the Existing Alignment. However, fewer permanent impacts to least Bell's vireo critical habitat would occur.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*) and Critical Habitat

The southwestern willow flycatcher is state and federally listed as endangered. The Existing Alignment Alternative would not result in temporary or permanent, direct impacts to the southwestern willow flycatcher. Permanent impacts could occur to 7.42 hectares (18.33 acres) of southern cottonwood willow riparian forest and 0.05 hectare (0.13 acres) of southern willow scrub, potential nesting habitat for the flycatcher. Temporary impacts could result to 5.80 hectares (14.32 acres) of habitats known to support the presence of the southwestern willow flycatcher. Indirect impacts could affect one migrant flycatcher.

The Southern Alignment Alternative would have permanent direct impacts to two nearby localities where southwestern willow flycatchers, presumably migrants, were documented in 2002. Permanent impacts would occur to 3.5 hectares (8.57 acres) of flycatcher critical habitat, and temporary impacts to 1.6 hectares (3.87 acres). Indirect effects may occur to approximately 111.16 hectares (274.68 acres) of riparian and wetland habitat.

Either build alternative alignment is likely to adversely affect the southwestern willow flycatcher. The direct removal of habitat could potentially contribute to the harm/harassment of individuals or populations. Additionally, indirect disturbance resulting from traffic noise and activities associated with the roadway could cause the loss of functioning habitat or potential "take" of the flycatcher.

Greater impacts to flycatcher individuals, and greater permanent impacts to federally designated southwestern willow flycatcher critical habitat, would occur with the Southern Alignment Alternative.

Coastal California Gnatcatcher (*Polioptila californica*) and Critical Habitat

The coastal California gnatcatcher is a federally listed threatened species, and a California species of concern. The Existing Alignment Alternative would permanently impact three pairs of gnatcatchers and 15.23 hectares (37.64 acres) of critical gnatcatcher habitat. It would temporarily impact 3.18 hectares (7.86 acres) and no known occurrences of individuals.

The Southern Alignment Alternative would permanently impact one pair of gnatcatchers, and 12.5 hectares (30.88 acres) critical habitat. It would temporarily impact 2.2 hectares (5.4 acres) of gnatcatcher habitat and no known occurrences of individuals.

Either build alternative alignment is likely to adversely affect the gnatcatcher. The direct removal of federally designated critical habitat could potentially contribute to the harm/harassment of individuals or populations. Additionally, indirect disturbance resulting from traffic noise and activities associated with the roadway could cause the loss of functioning habitat or potential "take" of the species. Greater impacts to gnatcatcher individuals and to critical habitat would occur with the Existing Alignment Alternative.

Summary of Impacts to Threatened or Endangered Species

Critical habitat for the gnatcatcher, vireo, and flycatcher falls within both alternatives for the project area. Therefore, adverse modification of designated critical habitat would be anticipated with implementation of either alternative. Permanent impacts for both the least Bell's vireo and southwestern willow flycatcher critical habitat would be greater with the Southern Alignment Alternative. Permanent impacts for the California gnatcatcher critical habitat would be greater with the Existing Alignment Alternative

The proposed project is likely to adversely affect the arroyo toad, coastal California gnatcatcher, least Bell's vireo and southwestern willow flycatcher. The direct removal of habitat could potentially contribute to the harm/harassment of individuals or populations. Additionally, indirect disturbance resulting from traffic noise and activities associated with the roadway could cause the loss of functioning habitat or potential "take" of the listed wildlife/plants.

On October 1, 2008, Caltrans received a Biological Opinion (BO) from USFWS on the Existing Alignment Alternative (FWS-SDG-08B0136-08F0900). In the BO, USFWS determined that the activities associated with the Existing Alignment Alternative, with mitigation incorporated into the project, would not be likely to jeopardize the continued existence of arroyo toad, coastal California gnatcatcher, southwestern willow flycatcher, least Bell's vireo, or San Diego ambrosia, nor would the project destroy or adversely modify gnatcatcher, flycatcher, or vireo critical habitat.

Fish, Crustaceans, Mollusks, and Other Aquatic Organisms in the Food Chain

Both the Existing Alignment Alternative and the Southern Alignment Alternative could result in permanent, direct impacts to aquatic species. These impacts would be due to the permanent loss of individual species and their habitat during construction activities, and also due to the

permanent loss of habitat necessary to support these species, both during construction activities and after the expansion and realignment of the highway.

Both alignments could also result in permanent, indirect impacts to aquatic species. This would be from increased pollution runoff due to additional highway traffic, resulting in potential loss of individual species or the habitats necessary to support these species, and increased nonnative species plant intrusion, resulting in potential loss of the habitats necessary to support these species. Permanent indirect impacts could result from increased pollution runoff due to additional highway traffic and interruption of migration or movement corridors.

Temporary impacts to aquatic organisms in the food chain would consist of indirect effects on the water column, such as turbidity, sedimentation, pollution, and contaminants, which could occur during construction and operation of the proposed facility. Such threats to aquatic organisms are discussed above under the heading "Potential Changes on Physical and Chemical Characteristics of the Aquatic Ecosystem."

Permanent indirect impacts include the effects of increased shading on the biological resources located beneath expanded bridges over riparian and wetland areas. Shading from the expanded bridge footprints and the subsequently increased shadow areas that would be cast on both sides of the expanded bridges would have a permanent indirect effect on vegetation and benthic communities, decreasing their overall productivity.

Although invertebrate productivity in benthic communities may also be affected, shading in the open water channel is not expected to have a substantial effect. In fact, it may provide a net benefit by providing cooler water temperatures for fish. The channel is braided, with shallow and continuous water flow, and has an established riparian overstory of cottonwoods and willows, which would diffuse any temperature effects from shading. Bridge widening under the Existing Alignment Alternative would further reduce and remove established riparian vegetation and subsequently alter temperatures to the water in the channels directly below. Though some direct sunlight would continue to illuminate the edges underneath the widened bridge (early morning on the east side, late afternoon on the west side), the habitat directly underneath the widened bridge is assumed to be indirectly impacted from shading to some extent. Shading could have a beneficial effect on some aquatic organisms by lowering water temperature or reducing sunlight.

The Southern Alignment Alternative would have the same type of indirect shading impacts as described for the Existing Alignment Alternative, which may include future decreases in plant growth and invertebrate abundance in shaded areas for some species and a beneficial effect for others. The permanent indirect impacts from shading that would result from either the Existing Alignment or the Southern Alignment Alternative are expected to exceed 0.02 hectare (0.5 acre) over the San Luis Rey River. These increased shadows would be cast on eastern and western sides of north/south-oriented bridges.

Where Existing Alignment Alternative or Southern Alignment Alternative features would be developed in aquatic sites, the features would permanently replace the habitat for plant communities and organisms that occupied that area. This would result in a permanent direct

impact. Such losses would result where the new permanent expanded road would be located within the existing wetland habitats.

Because the Existing Alignment Alternative is primarily outside the traditional riparian extent of the San Luis Rey River, its impacts are classified as being edge effects. It would not fragment the wetlands and waters associated with the river. Predominant impacts to riparian plant communities would be to southern cottonwood-willow riparian forest. Direct impacts to aquatic organisms in the food chain in jurisdictional waters would primarily occur in the 0.55 hectare (1.35 acres) of wetlands impacted. The majority of the Existing Alignment Alternative alignment is located above the floodline, so that organisms in the main river channel and its tributaries would be avoided.

The 0.9 meter (3 feet) change in the surface water elevation that would result from the Southern Alignment Alternative's encroachment in the 25-year floodplain could disturb circulation, alter substrates, destroy aquatic and upland organisms, alter flow volumes and velocities, and change drainage patterns. This would have severe effects on the physical state and productivity of wetlands.

The Southern Alignment Alternative would impact a larger expanse of aquatic sites, including designated special aquatic sites (see Table 3). This alternative closely contours the San Luis Rey River, effectively fragmenting many of the braided channel and spillover areas. Smaller tributaries and confluences, such as Little Gopher Canyon and Moosa Canyon Creek, would also be traversed.

These smaller tributaries would have altered temperature and flow. The Southern Alignment Alternative would result in substantial channelization as it would be located primarily within the 25-year floodplain. Effective alteration of flow and subsequent fragmentation of the San Luis Rey River system would reduce aquatic habitat functions and values.

Wildlife Corridors

Discharge of fill material associated with both the Existing Alignment Alternative and the Southern Alignment Alternative may eliminate or change breeding and nesting areas, destroy escape cover, alter travel corridors, or remove preferred food sources for resident aquatic species and associated other species. These species may be affected by the factors discussed in the Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem section above. The San Luis Rey River and its associated riparian habitats are of great significance to the biological value of the project area. The wetlands associated with the San Luis Rey River not only provide biological value as habitat for resident species but also allow for migration, genetic exchange, and general movement of both common and sensitive wildlife. High quality, native upland habitat, particularly sage scrub that persists along the project area, also contributes to the width and habitat constituent diversity of the corridor.

Impacts from both build alternatives would result in temporary and permanent impacts to the San Luis Rey River regional wildlife corridor and the adjacent, smaller, local wildlife corridors. These impacts include the loss of habitats that contribute to wildlife corridors, reduction or

fragmentation of habitat connectivity, corridor width reduction, and increased edge effects within these corridors. The extent to which these impacts affect species or suites of species is variable, due to the varying mobility of species and the varying tolerance for habitat reduction and edge effects.

Impacts to local corridor crossings between the river and uplands could affect small mammals, reptiles, and amphibians, including arroyo toads. Birds are not likely to be adversely impacted by corridor impacts as they can fly over the roadway. Overall, local corridor impacts throughout the project area could result in impacts to the regional San Luis Rey River corridor by decreasing wildlife movement into and out of the regional corridor. In addition to the temporary direct habitat impacts, temporary indirect corridor impacts could occur within local or regional corridor areas due to night lighting and noise during the construction phase.

The Southern Alignment Alternative would present a greater constraint to wildlife movement through the area. Currently, Old River Road is a local rural road with low traffic volumes (4,000 Average Daily Traffic [ADT]). Locating the highway south of the river means a wider barrier with much higher traffic volumes (32,000 ADT). In addition, existing SR-76 would remain in place and be used by local traffic, with volumes predicted to be 11,700 ADT. The Southern Alignment Alternative would cross the river at South Mission Road, which may further reduce the use of this important portion of a regional wildlife corridor. This new crossing, and the proximity of the alignment in the area of Little Gopher Canyon would have edge effects, reducing the width of the corridor. Overall, the Southern Alignment Alternative would be expected to have a greater impact to regional wildlife movement than implementation of the Existing Alignment Alternative.

Where the Existing Alignment Alternative would cross Bonsall Creek, an existing box culvert would be replaced with a bridge that would be approximately 71.9 meters (236 feet) long and 7 meters (23 feet) wide. The riparian habitats that flank the creek provide cover for wildlife movement from native habitats west of the river into the regional river corridor, and they allow for the daily local movements of species with smaller home ranges. Where the Existing Alignment Alternative alignment crosses Bonsall Creek, an existing box culvert would be replaced with an extended box culvert. The extension of an existing box culvert may decrease natural light within the culvert and adversely affect the movement of some wildlife through the culvert.

Ostrich Farms Creek connects with the San Luis Rey River at the Bonsall Preserve and provides local connectivity with preserved lands farther north. At the Bonsall Preserve/Ostrich Farms Creek crossing, the Existing Alignment Alternative would reduce the amount of native vegetation and cover available within the local corridor and at the local regional corridor confluence. A 14 meter (46 foot) long, 38 meter (125 foot) wide bridge is planned at this location.

The Southern Alignment Alternative is expected to have an adverse effect on wildlife movement through the Little Gopher Canyon Creek corridor. Loss of habitat, increased bridge width with increased shading, and edge effects (including increases in noise and lighting) would likely

reduce use of this corridor by some species. The Southern Alignment Alternative would have an adverse impact to arroyo toads migrating to upland habitats for overwintering.

The corridor associated with Little Gopher Canyon Creek extends from the San Luis Rey River eastward. It connects with the South Fork of Gopher Canyon Creek. To the east, extensive areas of chaparral and sage scrub flank the corridor. It eventually connects with open space parklands along Twin Oaks Valley Road. This is one of the most substantial tributaries of the San Luis Rey River regional corridor. It provides habitat for local wildlife and, while constrained in areas, has the potential to provide for movement and genetic exchange from extensive native habitats to the east and southeast of the San Luis Rey River through the river corridor to the northeast and the west.

At Dentro De Lomas, impacts to Diegan coastal sage scrub may reduce availability of this habitat within a stepping-stone corridor for California gnatcatchers and other sage scrub avian species. From Moosa Canyon south to Little Gopher Canyon on the southeast side of the San Luis Rey River and from Olive Hill Road south to Via Montellano on the northwest side of the San Luis Rey River, sage scrub occurs within the project area and provides the best habitat connectivity within the project vicinity.

POTENTIAL IMPACTS ON WETLANDS (SPECIAL AQUATIC SITES)

All wetlands associated with the San Luis Rey riverine system in the project area are special aquatic sites. Both the Existing Alignment Alternative and the Southern Alignment Alternative would have permanent and temporary impacts on these sites. The Southern Alignment Alternative would directly impact 2.62 hectares (6.48 acres) of permanent impacts on jurisdictional waters of the U.S. versus 0.74 hectares (1.83 acres) of permanent impacts for the Existing Alignment Alternative and would permanently affect 2.27 hectares (5.60 acres) of wetlands compared to the Existing Alignment Alternative's 0.55 hectares (1.35 acres).

Both the Existing Alignment Alternative and Southern Alignment Alternative would directly impact wetland habitat and eliminate the biological productivity in these areas. Both the Existing Alignment Alternative and the Southern Alignment Alternative have the potential to indirectly impact special aquatic sites in ways described above, such as introducing contaminates or pollutants and increasing suspended particulates or turbidity.

In the case of the Southern Alignment Alternative, more of the alignment would follow the river channel and would be in the 25-year floodplain, and so this alternative would fragment many of the braided channel and spillover areas. Flooding or significant raising of the water surface caused by the encroachment into the floodplain could have adverse effects on wetland productivity outside the areas of permanent and temporary impact. Smaller tributaries and confluences, such as Little Gopher Canyon Creek and Moosa Canyon Creek, would also be traversed. Therefore, there is the potential for the Southern Alignment Alternative to cause greater alteration of circulation patterns within the riverine system compared to the Existing Alignment Alternative.

Upland vegetation impacts would be greater under the Existing Alignment Alternative than the Southern Alignment. Conversely, wetland and riparian impacts would be greater with the Southern Alignment. Biologically, the Existing Alignment is the Preferred Alternative because fewer permanent impacts will occur to wetlands and aquatic habitats, least Bell's vireo, southwestern willow flycatcher, and arroyo toad habitats.

POTENTIAL EFFECTS ON HUMAN USE CHARACTERISTICS

Municipal and Private Water Supplies

Surface water in this stretch of the San Luis Rey River is not used for municipal or private water supplies. Downstream, the City of Oceanside operates a well field to extract groundwater from the river's aquifer, treat it by reverse osmosis, and use it to augment the city's potable water supply. Neither the construction nor operation of the proposed highway project would affect this function. Both the Existing Alignment Alternative and the Southern Alignment Alternative would employ BMPs to reduce contaminants, and filtration would further act to remove contaminants and impurities. Water from the affected areas could percolate to the aquifer, but would be biofiltered in the process of percolation. The reverse osmosis process would likely remove any residual contaminants. Because the area of wetlands impacted by either alignment is small and unlikely to affect the volume of flows downstream from the project area, the project is likely to have almost no effect on recharge of the aquifer.

Recreational and Commercial Fisheries

No commercial or significant recreational fishery exists in the San Luis Rey River in the affected segment or downstream. Neither alternative would affect recreational and commercial fisheries.

Water-related Recreation

The affected segment of the San Luis Rey River does not support substantial active recreational activity such as fishing, boating, canoeing, or kayaking. The stream is normally braided and shallow, and most of it is not easily accessible. Neither alignment is likely to adversely affect water-related active recreation.

Aesthetics

Some turbidity may occur during construction of either the Existing Alignment Alternative or the Southern Alignment Alternative, but because BMPs to minimize such effects will be employed, sediment plumes visible at significant distances from the construction areas would be avoided. Any such effects would be transient, disappearing with the cessation of construction. In the long term, the project with the included BMPs would not degrade water quality, disrupt natural substrate or vegetation characteristics, or significantly deny access to or visibility of the riverine resources. Flooding from the excessive encroachment into the San Luis Rey River 25-year floodplain by the Southern Alignment Alternative would be aesthetically displeasing and dangerous for adjacent public and private property owners.

PARKS, NATIONAL AND HISTORIC MONUMENTS, NATIONAL SEASHORES, WILDERNESS AREAS, RESEARCH SITES, AND SIMILAR PRESERVES

The County of San Diego is developing a regional park with, potentially, up to 647 hectares (1,600 acres) of preserve area in the stretch of the San Luis Rey River from the Oceanside city limit to west of I-15. A Master Plan for the park was approved and an EIR for the park certified by the County Board of Supervisors in October 2008. The Master Plan currently on the County's web site states that the "Master Plan should be fully coordinated with all current studies and planning initiatives including, but not limited to…the future expansion or improvement of SR-76" (p.36) and that "it is important that the County continues to coordinate with Caltrans regarding the expansion of SR-76" (p. 74). Ongoing coordination will assure that neither the Existing Alignment Alternative nor the Southern Alignment Alternative would conflict with park planning.

The project falls within the boundaries of the San Diego County Multiple Species Conservation Program (MSCP) and the San Diego Multiple Habitat Conservation Program (MHCP). The MSCP was designed to conserve native vegetation communities and associated species at the programmatic level rather than focusing on the preservation of single species on a project-by-project basis. The MSCP is a cooperative effort developed by the County of San Diego, other local jurisdictions, USFWS, and CDFG. The MSCP further divides the county into Subareas with their own plan. The first MSCP Subarea plan was approved for the southwestern portion of San Diego County in 1997. The Subarea plan for the Natural Communities Resource Study Area is the North County Multiple Species Conservation Program (NCMSCP). This Subarea plan is still in development.

The information available concerning the draft NCMSCP indicates that the importance of natural communities within the San Luis Rey River corridor will be recognized via the designation of the corridor as a Pre-Approved Mitigation Area (PAMA). PAMAs have been identified as areas with high biological value where conservation is encouraged within the boundaries of the NCMSCP. Conservation would be implemented by enforcing mitigation ratios to encourage development to take place outside of the PAMAs and to ensure appropriate mitigation ratios for impacts to resources within the PAMA.

Caltrans is not a signatory to the MHCP or the draft NCMSCP, although it is considered a cooperating agency in the Natural Communities Conservation Planning (NCCP) program. The NCCP program is the umbrella program that encompasses all regional planning efforts such as the MHCP and the draft NCMSCP.

The Bonsall Preserve is a 11 hectare (27-acre) wildlife refuge corridor owned by the Fallbrook Land Conservancy immediately north of SR-76 and west of South Mission Road at the east end of the proposed SR-76 project corridor. The preserve consists of wetlands and is habitat for numerous bird species. It would not be impacted by either the Existing Alignment Alternative or the Southern Alignment Alternative.

CUMULATIVE EFFECTS

The EIR/EIS for the project considered 27 other past, present, and reasonably foreseeable projects within the San Luis Rey River basin in the length likely to be affected by the SR-76 project. The Cumulative Impacts discussion from the EIR/EIS (Section 3.29, pp. 3-331 through 3-370) is hereby incorporated by reference. The EIR/EIS defined a Resource Study Area (RSA) for each cumulative issue discussed. Project files and available environmental documentation or other environmental information were reviewed at the City of Oceanside Planning Department, the County of San Diego Department of Planning and Land Use. The results for selected issues relevant to this analysis are presented in Table 6.

Environmental information on many of the projects in Table 6 is not available. Nonetheless, the EIR/EIS conducted an evaluation of cumulative impacts based on information that was available. The EIR/EIS conclusions regarding the issues of relevance to this analysis for the two build alternatives (the four columns on the right in Table 6) are summarized briefly below. The No Action Alternative would not result in a change in physical conditions and would have no cumulative impacts.

Hydrology and Floodplain

Current or foreseeable projects for which information on potential floodplain impacts is available and which would encroach into the base floodplain of the river include the proposed San Luis Rey Wastewater Treatment Plant (encroachment of 13 hectares [33 acres]), the Lake Rancho Viejo project (encroachment of 4.4 hectares [11 acres]), and Caltrans' two preliminary alignments for the SR-76 East project, extending from Mission Road to I-15. The precise acreage of floodplain encroachment for each SR-76 East alignment varies dependent upon which alternative for the SR-76 project is ultimately constructed, but the range of encroachment is between approximately 26 and 32 hectares (65 and 80 acres). None of these projects are are identified as having a significant floodplain encroachment.

The EIS/EIR does not identify the Existing Alignment Alternative as having significant floodplain encroachment impacts. The EIS/EIR does conclude that the Southern Alignment Alternative's floodplain encroachment would cumulatively contribute to significant floodplain impacts in the middle reaches of the San Luis Rey River.

Riparian and Wetland Communities

The existing health of habitat within the San Luis Rey River corridor was evaluated in a report prepared independently of documentation for the proposed project. This document assessed the existing health of wildlife corridors throughout California and identified the San Luis Rey River habitat linkage as a Connectivity Choke Point, which is defined as a narrow, impacted, or otherwise tenuous habitat linkage that connects two or more habitat blocks. Choke-points are essential to maintain landscape-level connectivity but are particularly in danger of losing connectivity function. The authors of the document assigned medium priority for protecting and/or restoring habitat connectivity of the San Luis Rey River habitat linkage. Based on the

Table 6
Projects in EIR/EIS Cumulative Impacts Analysis

Project Name and Status	Jurisdiction/ Location	Proposed Development	Hydrology and Floodplain	Riparian Communities	Wetlands and Waters	Threatened and Endangered Species
1. Marquart Ranch In planning phase.	County of San Diego/ 8724 West Lilac Road	Nine residential lots on 44.2 acres.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
2. Dai Deng Meditation Center In planning phase.	County of San Diego/ 6326 Camino del Rey	Meditation center on a nine-acre lot.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
3. Brisa Del Mar In planning phase.	County of San Diego/ Camino Del Rey and Luis Rey Heights Road	27 residential lots on 206 acres.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
4. Golf Green Estates In planning phase.	County of San Diego/ Intersection of Old River Road and Camino del Rey	116 residential lots on 29.45 acres.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
5. Bonsall Subdivision In planning phase.	County of San Diego/ West Lilac Road and Camino del Rey	76 condominiums and an open space preserve on 56 acres.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
6. Tabata Bonsall In planning phase.	County of San Diego	Three residential lots ranging from 9.28 to 12.37 acres.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.

Project Name and Status	Jurisdiction/ Location	Proposed Development	Hydrology and Floodplain	Riparian Communities	Wetlands and Waters	Threatened and Endangered Species
7. Meadow Wood Specific Plan In planning phase.	County of San Diego/ Northeast intersection of SR-76 and I-15	Multiple uses on 390 acres, including 517 single-family units, 644 multi-family units, an elementary school, 6 private parks, 124.3 acres of open space, and 56.8 acres of agricultural land.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
8. Campus Park West Specific Plan In planning phase.	County of San Diego/ Northeast intersection of SR-76 and I-15	Multiple uses, including 559 medium density residential units, 15.25 acres of retail, 14.44 acres of office, and 18.45 acres of service retail.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
9. Las Casitas Status unavailable.	County of San Diego/ Intersection of Camino del Cielo and Via Casitas	Residential development with approximately 12 condominiums on 1.74 acres.	Summary of environmental impacts was unavailable.	Summary of environmental impacts was unavailable.	Summary of environmental impacts was unavailable.	Summary of environmental impacts was unavailable.
10. Hidden Hills Approved but unconstructed.	County of San Diego/ Adjacent to Old River Road between Gopher Canyon Road and Dentro De Lomas Road	Residential development of 55 single-family residential lots on 131 acres.	No significant impacts were identified.	12.2 acres of Diegan sage scrub, 0.20 acre of Mulefat scrub, 0.20 acre of perennial grassland.	No significant impacts were identified.	At least one pair of California gnatcatchers, orange throated whiptail.

Project Name and Status	Jurisdiction/ Location	Proposed Development	Hydrology and Floodplain	Riparian Communities	Wetlands and Waters	Threatened and Endangered Species
11. New Vista Dual High School Approved and under construction.	Vista School District	School	No significant impacts were identified.	11.7 acres of coastal sage scrub, 4.2 acres of disturbed coastal sage scrub, 0.1 acre of mulefat scrub; 20.6 acres of potential sensitive plant habitat.	0.04 acre of freshwater marsh.	21.0 acres of potential habitat for arroyo toad; 15.9 acres of coastal sage scrub inhabited by at least two pairs of coastal California gnatcatchers; 0.4 acre of potential breeding habitat for southern willow flycatcher and least Bell's vireo.
12. Cielo Lindo Apartments In planning phase.	County of San Diego/ 354 Camino del Cielo, between West Lilac and Via Casitas	Residential development with approximately 20 multi-family units.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
13. Olive Hill Approved but unconstructed.	County of San Diego/ North side of Olive Hill Road and East of Triple Crown Drive	37 residential lots and 3 open space lots on 46 acres.	No significant impacts were identified.	5.14 acres of Diegan coastal sage scrub, 19.51 acres of nonnative grassland, 0.42 acre of assorted other plant species.	0.53 acre of riparian forest.	California gnatcatcher and habitat suitable aestivation habitat for the arroyo toad.
14. Sycamore Downs Office In planning phase.	County of San Diego/ 5425 Mission Road (Bonsall)	Redevelopment of an existing lot with an office park; three buildings totaling 114,882 square feet.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
15. Jefferies Ranch Approved and under construction.	City of Oceanside/ South of SR-76 and Jefferies Ranch Road	Residential development of 44 units.	No significant impacts were identified.	21.6 acres of coastal sage scrub, 2.5 acres of disturbed coastal sage scrub, 6.1 acres of nonnative grassland/coastal sage scrub, and 5.8 acres of nonnative grassland.	0.04 acre of riparian woodland, 0.02 acre of waters of the U.S. and 0.04 acre of waters of the State under the jurisdiction of CDFG.	Coastal California gnatcatchers during construction.

Project Name and Status	Jurisdiction/ Location	Proposed Development	Hydrology and Floodplain	Riparian Communities	Wetlands and Waters	Threatened and Endangered Species
16. Casitas at Spring Creek Approved and under construction.	City of Oceanside/ South of SR-76 between Melrose Drive and North Santa Fe Avenue	Residential development of 58 single-family units.	No significant impacts were identified.	0.95 acre of native/saltgrass grassland, 39 acres coyote brush scrub, 0.06 acre coast live oak woodland, 0.81 acre nonnative grassland.	5.71-acres of wetlands.	Impacts to least Bell's vireo and southwestern flycatcher habitat.
17. Guajome Crest Homes Approved and under construction.	City of Oceanside/ South of SR-76 east of Melrose Drive	Residential development of 36 units.	Summary of environmental impacts was unavailable.	Summary of environmental impacts was unavailable.	Summary of environmental impacts was unavailable.	Summary of environmental impacts was unavailable.
18. San Luis Rey River Park Master Plan In planning phase.	County of San Diego/ A 13.7-kilometer (8.5-mile) stretch of the San Luis Rey River between the Oceanside municipal boundary and I-15	Proposed park includes preservation and conservation of open space habitat, creation of multi-use trails, and five active parks in strategic locations. Softball, soccer, and multi-use fields, play areas, and picnic areas planned.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
19. Improve-ments to SR 76 from South Mission Road to I-15 In planning phase.	County of San Diego/ SR-76 corridor from South Mission Road to I-15	Corridor improvements to widen SR-76 from a two-lane facility to a four-lane facility. Alternative alignments are in preliminary stages of design.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.

Project Name and Status	Jurisdiction/ Location	Proposed Development	Hydrology and Floodplain	Riparian Communities	Wetlands and Waters	Threatened and Endangered Species
20. Lake Rancho Viejo Some portions are approved and under construction; others are currently in process.	County of San Diego/ Intersection of SR-76 and I-15	Residential development with approximately 1,750 units.	11 acres of floodplain encroachment.	13 acres of inland sage scrub, 6 acres of southern oak woodland.	30 acres of riparian habitat.	No significant impacts were identified.
21. Campus Park In planning phase.	County of San Diego/ Intersection of SR-76 and I-15.	Residential Development of approximately 1,000 units.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
22. San Luis Rey Wastewater Treatment Plan In environmental review.	San Luis Rey Water District/either side of San Luis River Valley east and west of Pankey Road	Construction of 3-acre wastewater treatment plant and two 15-acre percolation ponds.	33 acres of floodplain encroachment.	No significant impacts were identified.	No significant impacts were identified.	No significant impacts were identified.
23. Pala Mesa Resort No environmental analysis as of yet.	County of San Diego 2001 Old Highway 395	Addition of 186 resort rooms and a wedding facility to the existing Pala Mesa Resort.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.	Environmental analysis for this project has not been completed. Impacts cannot be identified.
24. Palomar Aggregates Quarry Approved but unconstructed.	County of San Diego/North side of SR 76 1.25 miles east of I-15	96.4-acre aggregate quarry and relocation and widening of 1.25 miles of SR-76 between project and I-15.	Unquantified encroachment into San Luis Rey River floodplain due to SR-76 widening.	27.3 acres of coastal sage scrub, 1.3 acres of oak woodland, 0.3 acre of southern willow scrub.	No significant impacts were identified.	21 acres of least Bell's vireo and southwestern willow flycatcher habitat.

Project Name and Status	Jurisdiction/ Location	Proposed Development	Hydrology and Floodplain	Riparian Communities	Wetlands and Waters	Threatened and Endangered Species
25. Gregory Canyon Landfill Approved but in litigation.	County of San Diego/Gregory Canyon – 5 kilometers (3 miles) east of I-15	716-hectare (1,770-acre) landfill.	No significant impacts were identified.	178.8 acres of coastal sage scrub, 44.1 acres of coastal sage scrub/ chaparral, 2.4 acres of southern willow scrub, 0.2 acre of mulefat scrub, 27 acres of coast live oak woodland, 0.2 acre of native perennial grassland.	0.8 acre of unvegetated waters, 2.4 acres of riparian scrub.	3.1 acres of arroyo toad breeding habitat, 306 acres of arroyo toad foraging habitat, 7.8 acres of least Bell's vireo and southwestern willow flycatcher habitat.
26. San Luis Rey River Arundo Removal and Habitat Restoration	Mission Resource Conservation District/San Luis Rey River Valley from I-15 to the Pacific Ocean	Removal of arundo from 220 acres of monotypic stands followed by revegetation.	It was determined that no impacts would occur.	220 acres of monotypic stands of arundo would be removed. After revegetation with native species, the project would result in a net benefit to riparian systems.	220 acres of monotypic stands of arundo would be removed. After revegetation with native species, the project would result in a net benefit to wetland functions.	Impacts to listed species would be avoided through the removal of arundo stands only during the nonbreeding season for listed species. After revegetation, additional habitat for listed riparian species would be available.
27. San Luis Rey River Flood Control Project	U.S. Army Corps of Engineers/San Luis Rey River Valley from College Boulevard to the Pacific Ocean	A total of 585 acres, including a 400-foot wide conveyance channel, mitigation sites, and detention ponds.	The project would greatly increase the floodwater safely conveyed by the lower reaches of the San Luis Rey River. Floodwater conveyance capacity would increase to 72,100 cfs from its current level of approximately 50,000 cfs.	A total of 457 acres of river bottom would be affected by vegetation and sediment management. A total of 233 acres of riparian habitat would be permanently modified.	No jurisdictional delineation was performed, but the bulk of the 457 acres of river bottom would be affected by vegetation and sediment management would constitute wetlands or waters. Annual vegetation management would impact 180 acres.	Permanent displacement of 65 pairs of least Bell's vireo, temporary displacement of 2 pairs of vireo, periodic (every 5 years) displacement of 11 pairs of vireo. Permanent elimination of 233 acres of vireo habitat. Two pairs of southwest willow flycatchers may be affected by the loss of 233 acres of habitat. An unknown number of arroyo toads may be harmed.

information provided in this document, the San Luis Rey River habitat linkage is in good health, but in need of preservation and enhancement.

Both build alternatives would result in impacts to sensitive riparian and wetland communities. As can be seen in a review of the other current or foreseeable projects within the natural communities RSA, many acres of the same types of sensitive natural community would be impacted in the future. More than 81 hectares (200 acres) of sage scrub vegetation alone would be impacted. These future projects viewed collectively clearly constitute a significant cumulative adverse impact to natural communities. The large acreage impacts of the proposed SR-76 project, regardless of which alternative is selected, would result in a cumulatively considerable contribution to this impact prior to mitigation.

Wetlands and Other Waters

Development throughout the region over time has reduced the amount of wetlands of all kinds. Although the San Luis Rey River is largely unchannelized upstream of the western project terminus, it has been subject to loss of wetlands over time. The single most important cause of wetland loss has been the conversion of wetlands to farmland. Sand mining has been a major cause upstream of I-15. Infrastructure improvements, such as the existing SR-76 and a series of major bridges, have also displaced wetlands.

Approximately 22 hectares (55 acres) of wetlands and waters of the U.S. and State would be impacted by projects listed in Table 6. A delineation of wetlands in the SR-76 East corridor, or projected impacts to wetlands and waters of the U.S., is not available at this time. The SR-76 East project would undoubtedly impact additional wetlands and waters of the U.S. It is likely that impacts to wetlands and waters of the U.S. associated with the projects described in Table 6 would be greater than listed, as approximations of impacts were not provided for all projects, and the environmental analysis has not been completed for many of the projects. While the federal policy of "no net loss" would suggest that there would ultimately be no net loss in the acreage of wetlands within the RSA, there is no way to comprehensively assess the success of project-specific mitigation efforts in terms of wetland acreage created or restoration of wetland function. The impacts to wetlands and waters of the U.S. resulting from the Southern Alignment Alternative and the impacts to wetlands from the Existing Alignment Alternative would have a cumulatively considerable contribution to these impacts prior to mitigation. After mitigation discussed later in this analysis, the impacts would not be cumulatively considerable, as mitigation would offset any significant biological impacts; therefore, there is no contribution to cumulative impacts.

Species Afforded Protection under the Federal Endangered Species Act

The EIS/EIR concludes that virtually every project listed in Table 6 for which data is available impacts species protected under the federal Endangered Species Act (FESA). Current and foreseeable projects within the RSA would result in significant cumulative impacts to species afforded protection under FESA. The contribution of the SR-76 project, regardless of which alternative alignment is selected, would be cumulatively considerable prior to mitigation. The mitigation discussed later in this analysis fully offsets any significant biological impacts of the

proposed project, as determined by the EIR/EIS and BO; therefore, there is no contribution to cumulative impacts.

EVALUATION AND TESTING

To minimize impacts to special aquatic sites, fill material composed of sand, soil, gravel, or other naturally occurring inert material should be subjected to testing to ensure that it is free of chemical, biological, or other contaminants. The extraction site should be examined to assess whether it is sufficiently removed from sources of pollution to provide reasonable assurance that the discharge material is not a carrier of contaminants. If the evaluation described above indicates the material is not a carrier of contaminants, then the required determinations pertaining to the presence or absence of contaminants can be made without testing. Evaluation must be in accordance with the requirements of 40 CFR Part 230 Section 230.60, and if testing is required, it must comply with the requirements of 40 CFR Part 230 Section 230.61.

Evaluation and testing have not been conducted for the proposed project. Caltrans would follow the required procedures to ensure that no adverse impacts related to the deposit of fill in waters of the U.S. can occur for either the Existing Alignment Alternative or the Southern Alignment Alternative.

ACTIONS TO MINIMIZE ADVERSE EFFECTS

Design iterations described earlier in this analysis served to reduce project effects on waters of the U.S. and other biological resources. Mitigation measures described below will reduce impacts to functions and values of waters of the U.S. by controlling the limits of construction and disturbance and reducing adverse effects of runoff on the physical and chemical properties of those waters. Those measures will also protect biological functions and values in areas adjacent to and near the construction limits and completed project. In addition, compensatory mitigation, also described below, will serve to restore functions and values associated with project's unavoidable impacts on functions and values through restoration, creation, and preservation of habitat similar to the functions and values of the areas impacted. As a means of avoiding or minimizing project impacts to upland, riparian, and wetland vegetation, the following measures are proposed for the SR-76 Melrose to South Mission Highway Improvement Project:

1. Upland, riparian and wetland vegetation would be avoided to the maximum extent practicable.

2. Sensitive vegetation outside the alignment footprint shall be designated an Environmentally Sensitive Area (ESA) and depicted as such on project maps and plans. No personnel or equipment would be allowed within these areas at any time. Sensitive vegetation areas may be marked and protected by temporary fencing (e.g., orange plastic snow fencing) or another appropriate method to prevent encroachment or unnecessary disturbance to the sites. Prior to and during construction, barriers would be established in key areas to deter public entry into the site. Additionally, temporary fencing would be provided to restrict access to sensitive vegetation adjoining the work limits.

3. Any graded habitat (e.g., slopes, right-of-way) adjacent to the San Luis Rey River corridor would be revegetated with an appropriate native plant mix. The proposed seed palette would be reviewed and approved by a qualified biologist prior to application in the field. The best methods of revegetation would be determined during design and could include duff, hydroseeding, planting, and/or temporary irrigation.

4. Revegetation with native plant species would occur as early as possible following grading (where applicable) and be accompanied with periodic monitoring and maintenance to ensure adequate coverage and prevent erosion and siltation into adjacent biologically sensitive areas.

5. The changing of oil, refueling, and other actions that could result in a release of a hazardous substance would be restricted to designated areas that are a minimum of 100 feet from any sensitive plant populations, sensitive habitats, or drainages. Such designated areas would be surrounded with berms, sandbags, or other barriers to further prevent the accidental spill of fuel, oil, or chemicals.

6. Storage and staging areas will be placed as far from sensitive habitat as possible, and kept free from trash and other waste. Staging areas for construction work will be located within previously disturbed sites and not adjacent to or within sensitive habitat.

7. Construction dust impacts would be offset through implementation of Caltrans Standard Specifications, including Section 7-1.01F Air Pollution Control, Section 10 Dust Control, Section 17 Watering, and Section 18 Dust Palliative. The project biologist would also periodically monitor the work area to ensure that construction-related activities do not generate excessive amounts of dust or cause other disturbances. Erosion control measures would be regularly checked by Caltrans inspectors, the biologist, or the resident engineer.

8. BMPs to address erosion and excess sedimentation would be incorporated into the project plans. Measures that would be implemented during construction include silt fencing, gravel bags, hay bales, fiber rolls, and protection/velocity dissipation at drainage outlet points. Measures that would be implemented after construction include plantings, retaining walls and slope stabilization techniques. Vegetation filters, such as swales or biostrips, may also be used to remove sediment and other contaminants from runoff prior to off-site flow. BMPs employed during construction would follow the applicable Caltrans guidelines and be detailed in the project's Storm Water Pollution Prevention Plan (SWPPP). At the current stage of design, engineered discharge features have not been developed for discharge into individual drainages, so it is not possible to describe specific BMPs that will be employed. Almost the entire length of the project, however, will use swales or biostrips for as roadway runoff BMPs, supplemented by appropriate use of BMPs selected from the menu described above.

9. Temporary disturbance to upland and riparian habitats within the project area would be offset through native revegetation of the area (1:1 ratio) upon completion of construction. All seeding/planting would occur on-site within the temporarily disturbed habitat and involve replacement with in-kind/similar native species to the maximum extent

practicable, or with alternative native vegetation in locations where exotics were previously established.

Mitigation for Impacts to Waters of the U.S.

The project proposes compensatory mitigation for impacts to waters of the U.S. All mitigation for permanent impacts to ACOE waters of the U.S. would occur at the Pilgrim Creek mitigation site. The mitigation is habitat-based; that is, functions and values of the affected waters of the U.S. are to be replaced at predetermined ratios of similar habitats to assure no net loss of functions and values.

The amount of mitigation necessary for the affected habitats would vary by the type of habitat and the area impacted (Table 7). The area of impact is multiplied by a replacement ratio, determined by the type of habitat affected. Typically, the longer the temporal impacts, the higher the ratio. For example, freshwater marsh can be restored in two to three years, in contrast to southern willow scrub, which can take up to five years. There are also several other factors that influence the replacement ratio, including habitat sensitivity, quality of the impacted habitat, and location of the impacts and mitigation relative to any significant preserve areas. Impacts to good to high quality riparian and wetland habitats would be mitigated at a ratio of 3:1. Degraded riparian habitat, such as southern cottonwood willow riparian areas, which lack primary constituent habitat elements, will be mitigated at 2:1. Giant reed/disturbed wetlands would be mitigated at a 1:1 ratio. All temporary impacts would be mitigated in place at a 1:1 ratio.

Table 7
Recommended Mitigation Ratios

Vegetation Community	NCMSCP/Oceanside MSCP Mitigation Ratios	Proposed Project Ratios
Riparian Habitat and Wetlands	No net loss	No net loss
Southern Cottonwood Willow Riparian Forest	2:1	3:1 Option A 5:1 Option B
Disturbed Wetland/Giant Reed	1:1	1:1
Southern Coast Live Oak Riparian Forest	2:1	3:1 Option A 5:1 Option B
Southern Willow Scrub	2:1	3:1 Option A 5:1 Option B
Mule Fat Scrub	2:1	3:1 Option A 5:1 Option B
Coastal and Valley Freshwater Marsh	2:1	3:1 Option A 5:1 Option B
Uplands		
Non-Native Grassland	0.5:1	0.5:1; 1:1 for toad aestivation areas
Diegan Coastal Sage Scrub	1.5:1	2:1
Disturbed Diegan Coastal Sage Scrub	1.5:1	2:1
Coast Live Oak Woodland	2:1	3:1

In addition to the replacement mitigation described above, mitigation measures intended to protect the functions and values of waters of the U.S. adjacent to and nearby the temporary impact areas will be employed as required by the BO and EIR/EIS. These include:

1. Caltrans would designate USFWS-approved biologists who would be responsible for overseeing monitoring and compliance with protective measures for the biological resources. The biologists will be familiar with the life history and ecology of the flora and fauna present within the San Luis Rey River watershed, including the arroyo toad, gnatcatcher, vireo, flycatcher, and ambrosia. The biologists will be familiar with field techniques, to include handling of species, as well as construction techniques relative to the project types proposed. A section 10(a)(1)(A) permit could be necessary for the handling of federally-listed species. The biologists would maintain communications with the appropriate personnel (project manager, resident engineer) to ensure that issues relating to biological resources are appropriately and lawfully managed. The biologists would also be present to ensure compliance with all conservation measures. The monitoring biologists will submit reports that document compliance with these measures to the USFWS upon request or, at a minimum, included in the end of the year report. In addition, the biologists will perform the following duties.

    a. Be on site during all vegetation clearing/grubbing and weekly during project construction in upland/riparian habitat to be impacted.

    b. Inspect the fencing and erosion control measures of all project areas (including preservation/restoration/creation sites) a minimum of once per week. Particular attention should be made immediately before and after rain events to ensure that any breaks in the fence or erosion control measures are repaired.

    c. Train and educate all contractors and construction personnel about the biological resources associated with this project and ensure that training is implemented by construction personnel. At a minimum, training would include: 1) the purpose for resource protection; 2) a description of the sensitive species and their habitats; 3) the conservation measures in the BO that should be implemented during project construction, including strictly limiting activities, vehicles, equipment, and construction materials to the fenced project footprint to avoid impacts to sensitive resource areas in the field (i.e., avoided areas delineated on maps or on the project site by fencing); 4) environmentally responsible construction practices; 5) the protocol to resolve conflicts that may arise at any time during the construction process; 6) the general provisions of the FESA, the need to adhere to the provisions of the FESA, and the penalties associated with violating the FESA.

    d. Ensure that any measures developed in coordination with the USFWS to avoid all impacts to all encountered sensitive species as well as other nesting birds are implemented.

e. Immediately notify the Resident Engineer to halt work, if necessary, and confer with the USFWS to ensure the proper implementation of species and habitat protection measures. The biologist would report any breach of the conservation measures within the BO to the USFWS within 24 hours of its occurrence.

f. Provide monthly reports and the final report. The reports would include: a summary of compliance with conservation measures, reasonable and prudent measures, and term and conditions; a summary or accounting of the acreages and applicable habitat types impacted; photographs; and other relevant summary information documenting that authorized impacts were not exceeded and that general compliance with all conditions of the BO was achieved.

2. Storage and staging areas will be placed as far from sensitive habitat as possible and kept free from trash and other waste. Staging areas for construction work will be located within permanent impact areas or previously disturbed sites within the project footprint and not adjacent to or within sensitive habitat.

3. The changing of oil, refueling, and other actions that could result in a release of a hazardous substance shall be restricted to designated areas that are a minimum of 100-feet from any sensitive plant populations, sensitive habitats, or drainages. Such designated areas will be surrounded with berms, sandbags, or other barriers to further prevent the accidental spill of fuel, oil, or chemicals.

4. Construction dust impacts will be offset through implementation of Caltrans Standard Specifications, including Section 7-1.01F Air Pollution Control, Section 10 Dust Control, Section 17 Watering, and Section 18 Dust Palliative. The project biologist will also periodically monitor the work area to ensure that construction-related activities do not generate excessive amounts of dust or cause other disturbances. Erosion control measures will be regularly checked by Caltrans inspectors, the biologist, or the resident engineer.

5. During any nighttime construction, all project lighting (e.g., staging areas, equipment storage sites, roadway) will be directed onto the roadway or construction site and away from sensitive habitat. Light glare shields may also be used to reduce the extent of illumination into adjoining areas.

6. Permanent lighting will be installed at intersections. If lighting is adjacent to sensitive habitat it will be directed or shielded away from the habitat. No permanent lights will be installed within sensitive habitat.

7. Best Management Practices employed during construction will follow the applicable Caltrans guidelines and be detailed in the project's Storm Water Management Plan, SWPPP, and Water Pollution Control Program.

8. Dewatering may be required for some aspects of construction involving in-stream work. Dewatering would not be conducted within wetlands. In specific cases where it is deemed necessary to work in a flowing stream/creek, the work area may be isolated and the flowing

water would be temporarily diverted around the work site to maintain downstream flows during construction. Proposed crossings and/or diversion structures would be the minimum necessary to complete the task. Any temporary dam or other artificial obstruction constructed would only be built from materials such as sandbags or clean gravel that would result in little or no siltation. When construction is completed, the flow diversion structure should be removed as soon as possible in a manner that would allow flow to resume and prevent debris or sediment accumulated from returning to the stream. If dewatering is conducted, either a pump would move water to an upland disposal site, or a sediment basin or other structure would be used to collect and treat the water. If applicable, an NPDES permit could be required. If not applicable, the water returned to the waterway should be equivalent in basic parameters (e.g. turbidity, total suspended solids) to that in the waterway during current conditions.

Mitigation for Impacts to Species Afforded Protection under the Federal Endangered Species Act

Providing habitat for federally listed species and other fauna and flora is among the biological functions and values associated with waters of the U.S. Habitat-based mitigation for impacts to waters of the U.S. also serves to mitigate impacts to wildlife and plants in general and to listed species in particular, and the provision and preservation of healthy habitat for sensitive flora and fauna helps restore functions and values lost to project impacts.

Compensatory mitigation will be implemented by creation and restoration of habitat at five offsite locations, known as the Morrison, Singh, Zwierstra, and Groves properties and the Pilgrim Creek mitigation site. Creation and restoration of habitat serve as mitigation for impacts to flora and fauna. Specific measures for mitigation to wildlife and plants are required of the project by the EIR/EIS. These include:

<u>Wildlife</u>

1. All vegetation within the construction limits will be cleared outside the breeding seasons (February 15 to September 15) to avoid impacts to the arroyo toad and migratory birds/raptors, including the gnatcatcher, vireo, and flycatcher. If clearing activities must occur during the breeding season, then pre-construction surveys will be conducted to ensure that no breeding or nesting birds are present within or immediately adjacent to the proposed clearing area. Should an active nest be located, then the USFWS will be contacted and discussions will commence to determine how to proceed. All possible arroyo toads will be cleared from the impact area(s) prior to project impacts (clearing, grubbing, and grading).

2. Sensitive habitat outside the alignment footprint will be designated an ESA and depicted as such on project maps and plans. No personnel or equipment will be allowed within these areas at any time. Prior to and during construction, barriers will be established in key areas to deter public entry into the site. Additionally, temporary fencing will be provided to restrict access to sensitive habitat adjoining the work limits.

3. Pile driving associated with construction of the San Luis Rey River Bridge shall only be conducted between September 16 and February 14 to reduce noise affects to nesting/breeding birds within the project vicinity including, the gnatcatcher, vireo and flycatcher.

4. The San Luis Rey River Bridge will have design features that will provide bats with potential sites for day/night roosting.

San Diego Ambrosia

1. Impacts to ambrosia associated with the construction of SR-76 will be avoided. Ambrosia will only be impacted during translocation efforts intended to benefit the species. Otherwise, ESA fencing will be constructed, prior to project impacts, around the proximal populations of ambrosia at the Jeffries Ranch, Marron, and Groves' properties. There will be a minimum 20 foot buffer between the extent of the known ambrosia population and the ESA fencing.

2. Ambrosia translocation and long term management plans will be approved by USFWS. The translocation plan will be incorporated into the Morrison property restoration plan and the long term management incorporated into the property's habitat management plan. Translocation will be implemented by a biologist with a history of translocating sensitive plant species. The exact location where the ambrosia propagules will be transplanted will be determined in the field by the Caltrans biologist in coordination with USFWS prior to transplantation.

3. The translocated ambrosia population will be monitored for a minimum of five years to document success or failure of the translocation efforts. Success will be achieved when at least 25 percent of the translocated ambrosia expand from the transplanted blocks as clones and/or newly established individuals.

Arroyo Toad

The BO includes specific measures designed to minimize impacts to the arroyo toad during construction. These include:

1. Caltrans would develop an arroyo toad translocation monitoring program to be implemented during all construction activities that have the potential to adversely affect the arroyo toad. This program would be coordinated with the USFWS and finalized prior to initiation of construction activities. The program would include the following requirements set forth in the species' conservation measures below.

2. Prior to clearing, grubbing, and construction activities, USFWS-approved biologists will monitor arroyo toad breeding activity in those project areas containing or adjacent to breeding habitat. The biologists will determine when egg clutches or larvae are no longer present in the waterway (generally late May at lower elevation, June at higher elevation). When sign of breeding is no longer evident, an exclusionary fence will be installed and clearance surveys initiated.

3. Prior to clearing, grubbing, and grading activities, arroyo toad temporary exclusionary fence will be constructed along the perimeter of the project footprint within or immediately adjacent to arroyo toad habitat (breeding and aestivation). The intent of the fence is to fully contain the area(s) to be impacted and to remove and exclude arroyo toads. Exclusionary fence in aestivation habitat will not be installed prior to May 1. The USFWS-approved biologist will be present during the exclusionary fence installation, reconfigurations, breach repairs, and weekly during the breeding season.

   The fence will consist of fabric or plastic at least two feet high, staked firmly to the ground with the lower one foot of material stretching outward along the ground and secured with a continuous line of gravel bags. No digging or vegetation removal will be associated with the installation of the fence and all materials shall be removed when the project is complete. The removal of some vegetation, without disturbing the soil, within the project footprint to aid in the observance and collection of arroyo toads is acceptable.

4. Prior to clearing, grubbing, and grading activities, USFWS-approved biologists will perform a minimum of three nighttime surveys inside the exclusionary fence and remove all arroyo toads found within its perimeter. The approved biologist will continue until there have been two consecutive nights without arroyo toads inside the fencing. Any breach in the exclusionary fence during times when arroyo toads area active above ground, will result in repeating the three-day minimum clearance surveys for that particular area.

5. If conditions do not occur that result in sufficient arroyo toad emergence and movement, a USFWS-approved biologist will attempt to elicit a response from the arroyo toads during nights late in the known breeding season, with temperatures above 50^{o} F, by spraying the area inside the exclusionary fence with water to a depth of approximately one to two inches to simulate a rain event.

6. Whether or not a simulated precipitation event is done, arroyo toads found within the project footprint will be captured and translocated by USFWS-approved biologists to the closest area of suitable habitat. The USFWS-approved biologist will coordinate with the appropriate property owner(s) and the USFWS on where the arroyo toads will be placed.

7. USFWS-approved biologists will maintain a complete record of all arroyo toads encountered and moved from harms way during translocation efforts. The date and time of capture, sex, physical dimensions, and coordinates/specific location of capture will be recorded and provided to the USFWS within 30 days of the completion of translocation.

   In addition to reporting on the translocation effort, monthly reports (including photographs of mpact areas), will be submitted to the USFWS during construction activities within areas demarcated by arroyo toad exclusion fencing. The monthly reports will document general compliance with all applicable conditions and report all incidents not in compliance with the BO. The reports will also outline the duration of arroyo toad monitoring, the location of construction activities, the type of construction that occurred, and equipment used. These reports would specify numbers, locations, sex, observed behavior, and remedial measures employed to avoid, minimize, and mitigate impacts to arroyo toads. All field notes and other

documentation generated by the USFWS-approved biologist shall be made available upon request to the USFWS.

8. To avoid transferring disease or pathogens between aquatic habitats during surveys and handling of arroyo toads, the approved biologists will follow the *Declining Amphibian Population Task Force's Code of Practice* (1991) *or* newer version when available.

9. The use of pitfall traps to increase capture of arroyo toads is acceptable. All pitfall traps will be covered or removed when clearance surveys are not occurring. Evidence of predation in the traps is grounds for removing them

In addition to the measures listed above, the BO requires compensatory measures for the arroyo toad as follows:

1. Compensation for permanent direct impacts to riparian and wetland habitats would occur at either a 3:1 or 5:1 ratio, depending on which option is chosen. Permanent impacts to upland habitat would be offset at 2:1 for coastal sage scrub (including disturbed) and 3:1 for coast live oak woodland. Where non-native grassland provides potential habitat for arroyo toad aestivation, impacts would be offset at a 1:1 ratio. Non-toad grassland impacts would be offset at a 0.5:1 ratio.

2. To avoid and minimize direct effects to the arroyo toad, exclusionary fencing would be installed. The area within the barrier fence would be surveyed by a Service-approved biologist prior to construction. If climatic conditions are not appropriate for arroyo toad movement during the clearance surveys, the biologist would attempt to elicit a response from the arroyo toad by irrigating the area to simulate a rain event. Any arroyo toads detected within the barrier fencing would be picked up by a biologist and placed on the outside of the barrier fence within the nearest suitable habitat. All fencing materials would be removed following construction. Ingress and egress of construction equipment and personnel would be kept to a minimum, but when necessary, equipment and personnel would use a single access point to the site. This access point would be as narrow as possible and would be closed off by exclusionary fencing when personnel are not on the project site.

3. Utilizing an experienced arroyo toad biologist for translocation efforts and oversight of the exclusionary fencing would greatly increase capture rates of arroyo toads and ensure further exclusion from the impact areas.

4. Directional fencing and a wildlife undercrossing placed at the south side of the San Luis Rey River near the Oceanside/Bonsall boundary would enhance connectivity for wildlife species and limit incidences of roadkill; and at the Bonsall Preserve/Ostrich Farms Creek crossing a bridge is planned to provide wildlife movement where none currently exists. In addition, strategically placed wildlife crossings from the San Luis Rey River to drainages at the Groves property would provide additional wildlife movement opportunities. Therefore, the widening of SR-76 is not anticipated to preclude connectivity between arroyo toad breeding areas and suitable upland habitat or result in the fragmentation of suitable arroyo toad upland habitat. To minimize road mortality, a permanent arroyo toad barrier fence would be installed

between the San Luis Rey River and SR-76 to prevent arroyo toads from attempting the dangerous crossing where movement into the upland is not possible or beneficial.

5. To avoid and minimize impacts to arroyo toads currently using portions of the Morrison property, no grading is proposed during restoration. Exotic plant species would be removed from the entire site outside the arroyo toad breeding season and natives would be replanted to enhance the habitat on site for both the arroyo toad and vireo.

6. Temporary disturbance to potential arroyo toad habitat would be offset through native revegetation of the impacted area (1:1 ratio) upon completion of the project. Indirect impacts would be offset at 1:1 for all potential arroyo toad habitats except disturbed wetland/giant reed that would be offset at a 0.5:1 ratio. Other measures to avoid/reduce adverse effects on the arroyo toad would involve restricting vegetation clearing from occurring during the breeding season (working from July 1 through March 1), except for a minimal amount of cutting vegetation to increase detection during the clearance surveys, having a Service-approved restoration plan, as well as other measures designed to avoid or minimize impacts.

Southwestern Willow Flycatcher and Least Bell's Vireo and Critical Habitat

Since these two species require similar habitat, compensatory mitigation for the project's impacts are applicable to both species. Compensatory mitigation required by the BO includes:

1. Disturbance to riparian and wetland habitats would be offset through restoration/enhancement of riparian and wetland habitat at the Morrison parcel, creation at the Zwierstra property, and/or riparian creation/restoration at the Singh parcel. Depending on the option chosen, compensation would occur at either a 3:1 ratio (1:1 creation, 2:1 restoration/enhancement) or 5:1 for riparian and wetland vegetation. Under Option A, impacts to riparian and wetland vegetation would be offset at a 3:1 ratio through creation of riparian habitat at the Singh property and restoration/enhancement at Morrison. However, under Option B, 4.94 acres of impacts to cottonwood willow riparian forest would be offset at a 1:1 ratio through the purchase of credits at Pilgrim Creek, 3.4 acres would be offset at a 3:1 ratio through the 1:1 creation (3.4 acres) of habitat at Zwierstra, and 2:1 (6.8 acres) restoration/enhancement at Zwierstra (3.3 acres) and Morrison (3.5 acres). Impacts to 1.11 acres of mulefat, 0.13 acre of southern willow scrub, and 3.09 acres of coast live oak riparian forest would be offset through restoration/enhancement at Morrison. An additional 9.9 acres of permanent direct impacts would be offset at a 5:1 ratio through restoration/enhancement of 49.95 acres of riparian habitat at Morrison. Permanent direct impacts to 0.003 acre of disturbed wetland/giant cane would be offset at a 1:1 ratio through the restoration/enhancement of native habitat species at Morrison.

2. Potential indirect impacts to 16.72 acres of vireo and flycatcher habitat would be compensated at a 1:1 ratio. A mitigation plan, outlining the details of the entire wetland and riparian preservation effort would be prepared and submitted to the appropriate resource agencies for review, with implementation following finalization of the document. Temporary disturbance to 15.87 acres of vireo and flycatcher habitat would be offset through native revegetation of the impacted area (1:1 ratio) upon completion of the project.

Temporary disturbance to cottonwood willow riparian forest, where this habitat contains the primary constituent elements for vireo, flycatcher and arroyo toad, would be offset though native revegetation of the area, as above, and would include restoration of similar habitat at the Morrison property at an additional 0.5:1 ratio, for a total 1.5:1 ratio. All seeding/planting would occur on-site and involve replacement with in-kind/similar, native species. Any graded habitat (e.g., slopes, right-of-way) adjacent to the wildlife corridor would be revegetated with an appropriate, native plant mix. The proposed seed mix would be reviewed and approved by a qualified biologist prior to application in the field. The best methods of revegetation would be determined during design and could include hydroseeding, cuttings, planting, and possibly temporary irrigation. Riparian vegetation would require irrigation. Other measures to avoid/reduce project effects upon the vireo and flycatcher would involve restricting vegetation clearing from occurring during the breeding season.

3. All vegetation within the construction limits would be cleared outside the vireo/flycatcher breeding season (March 15 to September 15) to avoid/minimize impacts to breeding birds. If activities occur during the breeding season, then a pre-construction survey would be conducted to ensure that no nesting birds are present within the proposed work area. Should a bird nest site be located, then appropriate measures may include (but are not limited to) monitoring during grading and construction to ensure no impacts to the occupied site, designation of the location as an ESA, and delaying/restricting project activities until nesting and fledging are complete. Pile driving would only be conducted between October 1 and February 14 to reduce noise affects to nesting/breeding birds within the project vicinity. During night construction, all project lighting would be directed onto the roadway or construction site and away from sensitive habitat. Light glare shield may also be used to reduce the extent of illumination into adjoining areas. Other direct and indirect impacts to flycatchers and/or vireos would be avoided and/or minimized through the implementation of conservation measures in the BO.

4. To avoid and minimize impacts to vireo currently using portions of the Morrison property, no grading is proposed during restoration. Exotic plant species would be removed from the entire site outside the vireo and flycatcher breeding seasons and natives would be replanted to enhance the habitat on site for both vireo and flycatcher.

Coastal California Gnatcatcher and Critical Habitat

Conservation measures required by the BO to offset project impacts to the coastal California gnatcatcher and its designated Critical Habit include:

1. Compensation for permanent direct impacts to 24.36 acres of coastal sage scrub and 13.28 acres of disturbed coastal sage scrub would occur at a 2:1 ratio through preservation of 75.28 acres of coastal sage scrub. Permanent direct impacts to other native vegetation types (e.g., non-native grassland) within designated gnatcatcher critical habitat would be offset at the ratios specified in Table 7. Potential indirect impacts to gnatcatcher habitat would be compensated at a 1:1 ratio through preservation of an additional 48.82 acres of coastal sage scrub. A total of approximately 124.10 acres of the approximately 180 acres of coastal sage scrub habitat at the Groves property would be preserved for this portion of the SR-76

realignment. The remaining approximately 55.9 acres of coastal sage on the Groves property would be available to offset impacts resulting from future projects (e.g., SR-76 East).

2. Temporary disturbance to potential gnatcatcher habitat would be offset through native revegetation of the area (1:1 ratio) upon completion of the project. All seeding/planting would occur on-site and involve replacement with in-kind/similar, native species, to the maximum extent practicable. Any graded habitat (e.g., slopes, right-of-way) adjacent to the wildlife corridor would be revegetated with an appropriate, native plant mix. The proposed seed mix would be reviewed and approved by a qualified biologist prior to application in the field. The best methods of revegetation would be determined during design and could include duff, hydroseeding, planting, and/or possibly irrigation.

3. All vegetation within the construction limits would be cleared outside the gnatcatcher breeding season (February 15 to August 31) to avoid/minimize impacts to breeding birds. If activities occur during the breeding season, then a pre-construction survey would be conducted to ensure that no nesting birds are present within the proposed work area. Should a bird nest site be located, then appropriate measures may include (but are not limited to) monitoring during grading and construction to ensure no impacts to the occupied site, designation of the location as an ESA, and delaying/restricting project activities until nesting and fledging is complete. Pile driving would only be conducted between October 1 and February 14 to reduce noise affects to nesting/breeding birds within the project vicinity. During night construction, all project lighting would be directed onto the roadway or construction site and away from sensitive habitat. Light glare shield may also be used to reduce the extent of illumination into adjoining areas. Other direct and indirect impacts to gnatcatchers would be avoided and/or minimized through the implementation of conservation measures in the BO.

Upland Vegetation

Upland vegetation is not under the jurisdiction of the ACOE under the Clean Water Act. Nevertheless, healthy native upland vegetation interacts ecologically with wetlands and waters for the functions and values associated with flora, fauna, habitat, wildlife movement, and native plant propagation. Compensatory mitigation for impacts to upland habitat therefore has a beneficial effect on functions and values of waters of the U.S. Unavoidable impacts to sensitive upland habitats, including Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, and coast live oak woodland would require compensatory mitigation (Table 8). Unavoidable impacts to non-native grassland would also require compensatory mitigation, which would ensure compliance with FHWA guidelines for projects located within areas covered by an approved Habitat Conservation Plan (HCP).

Table 8
Proposed Mitigation for Upland Vegetation

Existing Alignment Alternative			
Habitat Type	**Permanent Impacts Hectares (Acres)**	**Mitigation Ratio**	**Total Compensation Hectares(Acres)**
Uplands			
Coastal Sage Scrub	9.86 (24.36)	2:1	19.72 (48.72)
Disturbed Coastal Sage Scrub	5.37 (13.28)	2:1	10.75 (26.56)
Coast live oak woodland	0.09 (0.22)	3:1	0.27 (0.66)
Non-native grassland	17.47 (43.17) total = 12.43 (30.72) toad habitat	1:1 toad habitat; 0.5:1 other	1:1 = 12.43 (30.72);
	5.04 (12.45) other		0.5:1 = 2.52 (6.23)

Wetland and Riparian Vegetation

The Wetland Mitigation Plan for the Existing Alignment Alternative is included as an appendix to the FEIS/FEIR, as is the BO for the SR-76 project. The FEIR/FEIS will be provided to the resource agencies, including ACOE, for the permitting process. All actions proposed to minimize adverse effects of the Existing Alignment Alternative on wetlands, and relevant information relating to the mitigation effort, are described in detail in the Wetland Mitigation Plan.

Temporary Impacts

Once construction of the SR-76 Melrose to Mission Highway Improvement Project is complete, all areas temporarily disturbed during construction will be revegetated with native species as needed to compensate for temporary impacts. All temporary impacts would be mitigated onsite at a 1:1 ratio. Temporary impacts to ACOE jurisdictional wetlands and waters would total 1.74 hectares (4.31 acres). All areas of temporary impacts will be revegetated with native species and should provide biological functions similar to the habitat that will be impacted.

Permanent Impacts

Caltrans proposes to mitigate permanent impacts to wetland and riparian habitats at five offsite locations, known as the Morrison, Singh, Zwierstra, and Groves properties and the Pilgrim Creek mitigation site. All impacts to ACOE jurisdictional waters would be mitigated at the Pilgrim Creek mitigation site. The proposed mitigation sites have been identified in regional planning efforts as important to conservation of sensitive and special status species and to the buildout of the conservation preserves in the NCMSCP and the City of Oceanside Subarea Plan.

Morrison Property

The Morrison property, totaling about 48.97 hectares (121 acres), is located southeast of Gird Road and SR-76 in Bonsall. Adjacent to the Morrison property on the north is Caltrans right-of-way. The Morrison property and the adjacent Caltrans right-of-way property to the north total

63.9 hectares (157.9 acres); 8.74 hectares (21.6 acres) of the Caltrans property is not anticipated to be used for future highway construction.

An approximately 73-meter (240-foot) length of the main channel of the San Luis Rey River crosses the southern portion of the Morrison property. There is a well defined bank along much of the main channel, and this area is dominated by southern cottonwood willow riparian forest with varying amounts of exotics (primarily tamarisk and arundo) within this habitat. The remainder of the habitat onsite is a mixture of southern willow scrub, nonnative grassland, arrowweed scrub, and bare ground. Much of this area is heavily degraded, with large amounts of nonnative species such as tamarisk and arundo. Both the arroyo toad and the endangered least Bell's vireo have been documented onsite.

The parcel falls entirely within federally designated critical habitat area for least Bell's vireo. Ninety-eight percent of the property falls within federally designated critical habitat for the southwestern willow flycatcher, and the northeastern section of the property falls within federally designated critical habitat for the California gnatcatcher. The goal of mitigation onsite is to create vireo and southwestern willow flycatcher quality habitat from the degraded habitat onsite. Due to the presence of arroyo toads onsite, the aim is to create vireo and flycatcher habitat without grading the site and impacting potential toad habitat. Therefore, while vireo and southwestern willow flycatcher habitat with primary constituent elements will be created, ACOE jurisdictional wetlands will not be created. The southern cottonwood willow riparian forest within the banks has approximately 0-20 percent exotic cover and removal of exotic species in this area would restore this habitat to high quality vireo and southwestern willow flycatcher habitat. The degraded habitat outside the bank of the river is within the floodplain, and although it is outside of the bank of the stream, would generally be regulated as CDFG wetlands due to the presence of some riparian species. By removing the large stands of exotic species and planting willows, cottonwoods, and sycamores onsite, high quality CDFG jurisdictional riparian habitat will be created.

The property has approximately 1.13 hectares (2.8 acres) of freshwater marsh, 15.66 hectares (38.7 acres) of riparian forest, 29.95 hectares (74 acres) of riparian scrub, 1.46 hectares (3.6 acres) of disturbed habitat, and 2.14 hectares (5.3 acres) of nonnative grassland. Due to the presence of riparian habitat, the endangered southwestern willow flycatcher may use the site. Enhancement and restoration of the site may include removing exotics, maintaining and creating friable soils for toads, creating willow scrub in appropriate areas, controlling illegal access, installing controlled access for hiking and equestrian opportunities, and establishing a San Diego ambrosia population.

Singh Property

The Singh property totals about 24.28 hectares (60 acres) southeast of Sleeping Indian Road and North River Road. It is bisected by the San Luis Rey River in the northeastern area of the City of Oceanside. Currently, the property is being used to grow row crops. Caltrans proposes to lower the topography to hydrologically functional elevations before planting the site. There are potentially 15.34 hectares (37.9 acres) of riparian habitat creation, 2.23 hectares (5.5 acres) of

riparian and freshwater marsh restoration, and 5.5 hectares (13.6 acres) of coastal sage scrub buffer restoration.

Zwierstra Property

The Zwierstra property is located along the north side of the SR-76 between Melrose and East Vista Way. It is about 7.84 hectares (19.38 acres), 1.62 hectares (4 acres) of which are riparian forest. The remainder has been in use as a dairy farm and a residence. There is the potential for 2.71 hectares (6.7 acres) of riparian habitat creation, 1.62 hectares (4.0 acres) of riparian restoration, and 2.83 hectares (7 acres) of upland restoration.

Groves Property

The Groves property consists of 286 acres at the southwest corner of SR-76 and Olive Hill Road. Approximately 180 acres of coastal sage scrub, with approximately 82 acres categorized as disturbed. A majority of the property is designated critical habitat for the coastal California gnatcatcher. Numerous gnatcatchers have been recorded onsite although there is no significant data for estimating the size of the metapopulation. Ambrosia has also been recorded on the site. In addition to coastal sage scrub, the site contains approximately 11 acres of coast life oak woodland and 50 acres of non-native grassland. A significant arroyo toad population is associated with the nearby San Luis Rey River. The Groves property does not support breeding habitat for the toad but does contain upland habitat suitable for burrowing, dispersing, and aestivation.

Pilgrim Creek Mitigation Site

The Pilgrim Creek mitigation site is located along Pilgrim Creek, a tributary of the San Luis Rey River. It would be the site for mitigation of all permanent impacts to ACOE waters of the U.S. The stretch of Pilgrim Creek on the site supports approximately 3.97 hectares (9.8 acres) of willow dominated riparian habitat. Coastal sage scrub, including 14.00 hectares (34.6 acres) of restored habitat, covers the slope bordering the site to the west, and the center of the site supports riparian vegetation planted in 1996 within a 20.15 hectare (49.8 acre) restoration area as well as 0.60 hectares (1.5 acres) of freshwater marsh. An additional small cell of planted riparian vegetation lies between Pilgrim Creek and Douglas Drive on the east side of the creek. The site has 1.98 hectares (4.9 acres) of available mitigation credit.

Mitigation Plan

Proposed mitigation for this project has been prepared outlining compensation for project impacts. In addition, a planting scheme, site preparation, an exotics control program, irrigation, grading requirements, and success criteria for the Morrison mitigation site are in preparation. A five-year plant establishment period, including habitat management and monitoring beginning the season after the plantings have been installed, would be implemented at all sites.

The permanent and temporary impacts to sensitive habitat as a result of the SR-76 widening projects will be compensated as follows:

- Temporary disturbance to both upland and riparian habitats within the project area will be offset through native revegetation of the area (1:1 ratio) upon completion of construction. All seeding/planting will occur on site within the temporarily disturbed habitat and involve replacement with in-kind or similar native species, to the maximum extent practicable, or with alternative native vegetation in locations where exotics were previously established.

- Temporary disturbance to cottonwood willow riparian forest, where this habitat contains the primary constituent elements for vireo, flycatcher, and arroyo toad, will be offset though native revegetation of the area, as above, and will include restoration and preservation of habitat at a 1.5:1 ratio.

- Riparian and wetland habitats will be mitigated through a combination of creation, restoration, and preservation at the Morrison and Zwierstra properties (see Figure 3.21-4 in Chapter 3), as well as the Pilgrim Creek mitigation bank. Permanent wetland impacts will be mitigated at a minimum of 1:1 creation (no net loss) with the remainder as restoration and preservation. Any habitat on parcels not used to mitigate for the SR-76 Melrose to Mission project may be used for the proposed SR-76 Mission to I-15 Highway Improvement Project or other projects along the corridor.

The final mitigation plan must be reviewed and approved by and the appropriate resource agencies prior to the initiation of construction. This plan would be implemented to measure success of the mitigation and allow sign-off by the requisite resource agencies upon completion of the monitoring period. At a minimum, a two-year plant establishment period and 5-year habitat management and monitoring program would be implemented on the mitigation lands. Plant survival and growth would be sustained for at least two dry seasons without irrigation or human intervention. Irrigation would be gradually withdrawn from the mitigation sites. Invasive exotic plant species including giant reed, tamarisk, fennel, and cocklebur (*Xanthium spinosum*) would be removed from all selected mitigation sites.

Caltrans has acquired the Groves and Morrison properties and is in the process of acquiring the Zwierstra property along SR-76 as potential mitigation sites for the SR-76 highway widening projects. In addition, the existing Pilgrim Creek mitigation bank, where all mitigation to ACOE jurisdictional waters will occur, will be utilized, with an available 1.99 hectares (4.94 acres) mitigation credit. The sites were selected based on estimates of available habitat types and habitat suitability for sensitive species. Two mitigation options have been developed to offset the SR-76 project's impacts on native vegetation, including ACOE jurisdictional areas. These options are described below as Option A and Option B. Option B would utilize the Groves, Morrison, Zwierstra, and Pilgrim Creek sites.

Option A

Table 9 lists the mitigation sites for Option A. Option A would utilize all of the five mitigation sites described above (Groves, Morrison, Singh, Zwierstra, and Pilgrim Creek).

Table 9
Option A Mitigation Sites

Vegetation Type	Groves ha(ac)	Morrison ha(ac)*	Singh ha(ac)	Zwierstra ha(ac)	Pilgrim Creek ha(ac)
Coastal Sage Scrub	72.84 (180)	0	5.5 (13.6) upland creation	2.83 (7.00) upland creation	0
South Coast Live Oak Woodland	4.45 (11)	0			0
Non-native Grassland	20.23 (50)	0			0
Riparian forest/ Riparian scrub	0	60.01 (148.28) RS/RF restoration	15.34 (37.9) RS/RF FWM/RS creation; 2.23 (5.5) restoration-	1.38 (3.4) RS/RF creation; 1.34 (3.3) RS/RF restoration	1.98 (4.9) riparian credits

RS = Riparian Scrub
RF = Riparian Forest
FWM = Freshwater Marsh
* The Morrison site totals 148.28 acres; it includes the 136.54-acre Morrison parcel plus 11.74 acres of Caltrans right-of-way located between the Morrison parcel and the proposed alignment.

Proposed mitigation for Option A permanent impacts will consist of a combination of creation and restoration of habitat types as shown in Table 10. Proposed mitigation for Option A indirect impacts will consist of a combination of creation and restoration of habitat types as shown in Table 11. Functions and values of the wetlands areas impacted and the areas proposed as mitigation sites, and plans for the creation of the mitigation areas, are discussed in the Wetland Mitigation Plan.

Table 10
Option A Mitigation Proposal for Permanent Impacts

Habitat Type	Permanent Impacts ha (ac)	Mitigation Ratio	Total Compensation ha (ac)	Mitigation Location	Available Acres Remaining
Riparian and Wetlands					
Mulefat Scrub	0.45 (1.11)	3:1	2.25 (1.35)	1:1 creation at Singh= 37.9 - 1.11ac 2:1 restoration at Morrison =74 - 2.22ac	Singh = 36.79 creation RS/RF, 5.5 restoration-FWM/RS; Morrison = 146.06 RS/RF; Zwierstra = 3.4 RS/RF creation, 3.3 RF restoration; Pilgrim Creek = 4.94.
Southern Willow Scrub	0.05 (0.13)	3:1	0.16 (0.39)	1:1 creation at Singh =36.79 - 0.13 ac 2:1 restoration at Morrison = 71.78 - 0.26 ac	Singh = 36.66 creation RS/RF, 5.5 restoration FWM/RS; Morrison =145.80 RS/RF; Zwierstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Creek = 4.94.
Disturbed Wetland	0.001 (0.003)	1:1	0.001 (0.003)	1:1 creation at Singh = 36.66 - 0.003 ac 2:1 restoration at Morrison = 145.8 - 0.006	Singh = 36.66 creation RS/RF, 5.5 restoration FWM/RS; Morrison = 145.79 RS/RF; Zwierstra = 3.4 RS/RF creation, 3.3, RS/RF restoration;. Pilgrim Creek = 4.94.
Southern Cottonwood Willow Riparian Forest (for ACOE jurisdictional impacts)*	1.98 (4.94)	1:1	1.98 (4.94)	1:1 creation at Pilgrim Creek = 4.94 – 4.94	Singh = 36.66 creation RS/RF, 5.5 restoration FWM/RS; Morrison = 145.79 RS/RF; Zwierstra = 3.4 RS/RF creation, 3.3 RS/RF restoration;. Pilgrim Creek = 0.
Southern Cottonwood Willow Riparian Forest	5.42 (13.39)	3:1	16.26 (40.17)	1:1 creation at Singh = 36.66 – 13.39; 2:1 restoration at Morrison 145.79 – 26.78	Singh = 23.27 creation RS/RF, 5.5 restoration FWM/RS; Morrison = 119.01 RS/RF; Zwierstra 3.4 RS/RF creation, 3.3 RS/RF restoration;. Pilgrim Creek = 0.
Southern Coast Live Oak Riparian Forest	1.25 (3.09)	3:1	3.75 (9.27)	1:1 creation at Singh = 23.27 – 3.09; 2:1 restoration at Morrison 3.36-3.36,	Singh = 20.18 creation RS/RF, 5.5 restoration FWM/RS; Morrison = 115.65 RS/RF; Zwierstra 3.4 RS/RF creation, 3.3 RS/RF restoration;. Pilgrim Creek = 0.
Uplands					
Coastal Sage Scrub	9.86 (24.36)	2:1	19.72 (48.72)	Groves preservation 180 – 48.72	Groves = 131.28 CSS preservation. Zwierstra = 7.0 upland creation.
Disturbed Coastal Sage Scrub	5.37 (13.28)	2:1	10.75 (26.56)	Groves preservation 131.28 – 26.56	Groves = 104.72 CSS preservation. Zwierstra = 7.0 upland creation.
Coast Live Oak Woodland	0.29 (0.72)	3:1	0.87 (2.16)	Groves preservation 11.0- 2.16	Groves = 8.84 CLOW preservation. Zwierstra = 7.0 upland creation.
Non-native Grassland	17.47 (43.17) total = 12.43 (30.72) toad habitat, 5.04 (12.45) other	1:1 toad habitat, 0.5:1 other	14.95 (36.95)	Groves preservation 50.0- 36.95	Groves = 13.06 NNG preservation. Zwierstra = 7.0 upland creation.

FWM = Freshwater marsh; RS = Riparian scrub; RF = Riparian Forest; CSS = Coastal Sage Scrub; CLOW = Coast Live Oak Woodland; NNG = Non-native Grassland

Table 11
Option A Mitigation Proposal for Indirect* Impacts

Habitat Type	Indirect Impacts ha (ac)	Mitigation Ratio	Total Compensation ha (ac)	Mitigation Location	Available Acres Remaining
Riparian and Wetlands					
Southern willow scrub	0.51 (1.25)	1:1	0.51 (1.25)	Morrison 115.65 – 1.25	Morrison = 114.4 RS/RF; Singh = 20.18 creation RS/RF; 5.5 FWM/RS restoration; Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Creek = 0.
Disturbed Wetland	1.98 (4.9)	0.5:1	0.99 (2.45)	Morrison 114.4 – 2.45	Morrison = 111.95 RS/RF; Singh = 20.18 creation RS/RF; 5.5 FWM/RS restoration; Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Creek = 0.
Southern cottonwood willow riparian forest	25.43 (62.84)	1:1	25.43 (62.84	Morrison 111.95 – 62.84	Morrison = 49.11 RS/RF; Singh = 20.18 creation RS/RF; 5.5 FWM/RS restoration; Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Creek = 0.
South coast live oak riparian	2.66 (6.57)	1:1	2.66 (6.57)	Morrison 49.11 – 6.57	Morrison = 42.54 RS/RF; Singh = 20.18 creation RS/RF; 5.5 FWM/RS restoration; Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Creek = 0.
Coastal and Valley Freshwater Marsh	0.03 (0.07)	1:1	0.03 (0.07)	Morrison 42.54 – 0.07	Morrison = 42.47 RS/RF; Singh = 20.18 creation RS/RF; 5.5 FWM/RS restoration; Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Creek = 0.
Uplands					
Coastal sage scrub	13.04 (32.23)	1:1	13.04 (32.23)	Groves preservation 104.72 – 32.23	Groves = 72.49 CSS preservation; Singh = 13.6 upland creation; Zweirstra = 7.0 upland creation
Disturbed coastal sage scrub	6.71 (16.59)	1:1	6.71 (16.59)	Groves preservation 72.49 – 16.59	Groves = 55.9 CSS preservation; Singh = 13.6 upland creation; Zweirstra = 7.0 upland creation
Coast live oak woodland	0.27 (0.67)	1:1	0.27 (0.67)	Groves preservation 8.84 – 0.67	Groves = 8.17 CLOW preservation; Singh = 13.6 upland creation; Zweirstra = 7.0 upland creation

FWM = Freshwater marsh; RS = Riparian scrub; RF = Riparian Forest; CSS = Coastal Sage Scrub; CLOW = Coast Live Oak Woodland; NNG = Non-native Grassland

* Long-term temporary impacts to healthy southern cottonwood willow riparian forest (5.80 ha [14.32 ac]) will be mitigated at 1.5:1. Mitigation will occur onsite at 1:1 and offsite at 0.5:1 (2.90 ha [7.16 ac]). Offsite mitigation will occur at the Morrison site, leaving 14.29 ha (35.31 acres) available.

Option B

Table 12 lists the mitigation sites for Option B. Option B would utilize the Groves, Morrison, and Zwierstra properties and the Pilgrim Creek mitigation site.

Table 12
Option B Mitigation Sites

Vegetation Type	Groves ha(ac)	Morrison ha(ac)*	Zwierstra ha(ac)	Pilgrim Creek ha(ac)
Coastal Sage Scrub	72.84 (180)	0	7.0 Upland creation	0
South Coast Live Oak Woodland	4.45 (11)	0		0
Non-native Grassland	20.23 (50)	0		0
Riparian Areas	0	148.28 restore RS/RF (2.8 is freshwater marsh)	3.4 RS/RF creation; 3.3 RS/RF restoration	4.94 riparian credit

RS = Riparian Scrub
RF = Riparian Forest
* The Morrison site totals 148.28 acres; it includes the 136.54-acre Morrison parcel plus 11.74 acres of Caltrans right-of-way located between the Morrison parcel and the proposed alignment.

Proposed mitigation for Option B permanent impacts will consist of a combination of creation and restoration of habitat types as shown in Table 13. Proposed mitigation for Option B indirect impacts will consist of a combination of creation and restoration of habitat types as shown in Table 14. Functions and values of the wetlands areas impacted and the areas proposed as mitigation sites, and plans for the creation of the mitigation areas, are discussed in the Wetland Mitigation Plan.

Table 13
Option B Mitigation Proposal for Permanent Impacts

Habitat Type	Permanent Impacts ha (ac)	Mitigation Ratio	Total Compensation ha (ac)	Mitigation Location	Available Acres Remaining
Riparian and Wetlands					
Mulefat Scrub	0.45 (1.11)	5:1	2.25 (5.55)	5:1 restoration at Morrison= 148.28 - 5.55	Morrison* = 142.73 RS/RF. Zweirstra = 3.4 RS/RF creation; 3.3 RS/RF restoration. Pilgrim Creek = 4.94 riparian credits.
Southern Willow Scrub	0.05 (0.13)	5:1	0.26 (0.65)	5:1 restoration at Morrison = 142.73 - 0.65 ac	Morrison = 142.08 RF/RS restoration acres Zweirstra = 3.4 RS/RF creation; 3.3 RS/RF restoration. Pilgrim Creek= 4.94 riparian credits.
Disturbed Wetland	0.001 (0.003)	1:1	0.001 (0.003)	1:1 restoration at Morrison = 142.08 - 0.003 ac	Morrison = 142.07 RF/RS restoration acres Zweirstra = 3.4 RS/RF creation; 3.3 RS/RF restoration. Pilgrim Creek = 4.94 riparian credits.
Southern Cottonwood Willow Riparian Forest (for USACE jurisdictional impacts)	1.98 (4.94)	1:1	1.98 (4.94)	1:1 creation at Pilgrim = 4.94 – 4.94	Morrison = 142.07 RF/RS restoration acres; Zweirstra = 3.4 RS/RF creation; 3.3 RS/RF restoration. Pilgrim = 0 riparian credits.
Southern Cottonwood Willow Riparian Forest	5.42 (13.39)	3:1	4.13 (10.2)	1:1 creation at Zweirstra = 3.4 – 3.4 2:1 restoration at Zweirstra = 3.3 – 3.3 2:1 restoration at Morrison = 142.07 – 3.5	Morrison = 138.58 RS/RF restoration acres Zweirstra = 0 RS/RF creation; 0 RS/RF restoration. Pilgrim = 0 riparian credits.
Southern Cottonwood Willow Riparian Forest	1.25 (3.09)	5:1	20.21 (49.95)	5:1 restoration at Morrison = 138.58 – 49.95	Morrison = 88.63 RF/RS restoration acres Zweirstra = 0 RS/RF creation; 0 RS/RF restoration . Pilgrim = 0 riparian credits.
Southern Coast Live Oak Riparian Forest	0.45 (1.11)	5:1	6.25 (15.45)	5:1 restoration at Morrison = 88.63 – 15.45	Morrison = 73.18 RF/RS restoration acres. Zweirstra = 0 RS/RF creation; 0 RS/RF restoration . Pilgrim = 0 riparian credits.
Uplands					
Coastal Sage Scrub	9.86 (24.36)	2:1	19.72 (48.72)	Groves preservation CSS = 180 – 48.72	Groves = 131.28 CSS preservation
Disturbed Coastal Sage Scrub	5.37 (13.28)	2:1	10.75 (26.56)	Groves preservation CSS = 131.28 – 26.56	Groves = 104.72 CSS preservation
Coast Live Oak Woodland	0.29 (0.72)	3:1	0.87 (2.16)	Groves preservation CLOW = 11.0- 2.16	Groves = 8.84 CLOW preservation
Non-native Grassland	17.47 (43.17) total = 12.43 (30.72) toad habitat, 5.04 (12.45) other	1:1 toad habitat, 0.5:1 other	1:1 = 12.43 (30.72); 0.5:1 = 2.52 (6.23)	Groves preservation NNG 50.0- 36.95	Groves = 13.05 NNG preservation. Zwierstra = 7.0 upland creation.

FWM = Freshwater marsh; RS = Riparian scrub; RF = Riparian Forest; CSS = Coastal Sage Scrub; CLOW = Coast Live Oak Woodland; NNG = Non-native Grassland

Table 14
Option B Mitigation Proposal for Indirect* Impacts

Habitat Type	Indirect Impacts ha (ac)	Mitigation Ratio	Total Compensation ha (ac)	Mitigation Location	Available Acres Remaining
Riparian and Wetlands					
Southern willow scrub	0.51 (1.25)	1:1	0.51 (1.25)	Morrison 73.18 -1.25	Morrison = 71.93 RS/RF. Zweirstra = 0 acres creation/restoration; 0 acres restoration. Pilgrim = 0 riparian credits.
Disturbed Wetland	1.98 (4.9)	0.5:1	0.99 (2.45)	Morrison 71.93 – 2.45	Morrison 69.48 RS/RF. Zweirstra 0 acres creation/restoration; 0 acres restoration. Pilgrim = 0 riparian credits.
Southern cottonwood willow riparian forest	25.43 (62.84)	1:1	25.43 (62.84)	Morrison 69.48 – 62.84	Morrison = 6.64 RS/RF. Zweirstra = 0 acres creation/restoration; 0 acres restoration. Pilgrim = 0 riparian credits.
South coast live oak riparian	2.66 (6.57)	1:1	2.66 (6.57)	Morrison 6.64 – 6.57	Morrison = 0.07 RS/RF. Zweirstra = 0 acres creation/restoration; 0 acres restoration.
Coastal and Valley Freshwater Marsh	0.03 (0.07)	1:1	0.03 (0.07)	Morrison 0.07 – 0.07	Morrison = 0 acres RS/RF restoration. Zweirstra = 0 acres creation/restoration; 0 acres restoration. Pilgrim = 0 riparian credits.
Uplands					
Coastal sage scrub	13.04 (32.23)	1:1	13.04 (32.23)	Groves preservation CSS = 104.72 – 32.23	Groves = 72.49 CSS preservation; Singh = 13.6 upland creation; Zweirstra = 7.0 upland creation.
Disturbed coastal sage scrub	6.71 (16.59)	1:1	6.71 (16.59)	Groves preservation CSS = 72.49 – 16.59	Groves = 55.9 CSS preservation; Singh = 13.6 upland creation; Zweirstra = 7.0 upland creation.
Coast live oak woodland	0.27 (0.67)	1:1	0.27 (0.67)	Groves preservation CLOW = 8.84 – 0.67	Groves = 8.17 CLOW preservation; Singh = 13.6 upland creation; Zweirstra = 7.0 upland creation.

FWM = Freshwater marsh; RS = Riparian scrub; RF = Riparian Forest; CSS = Coastal Sage Scrub; CLOW = Coast Live Oak Woodland; NNG = Non-native Grassland

* Long-term temporary impacts to healthy southern cottonwood willow riparian forest (5.80 ha [14.32 ac]) will be mitigated at 1.5:1. Mitigation will occur onsite at 1:1 and offsite at 0.5:1 (2.90 ha [7.16 ac]). These impacts will be mitigated at the Groves site, with preservation of coast live oak woodland. The Groves remainder will be 0.41 ha (1.01 ac) of CLOW, 22.62 ha (55.9 ac) of CSS, and 5.28 ha (13.05 ac) of NNG.

LEDPA Identification

Since the aquatic resource avoidance alternatives are not practicable, and because each of the SR-76 Middle Alignment Alternatives would result in some aquatic resource loss, the practicable alternative with the least damage to aquatic resources must be selected unless it has other significant adverse environmental consequences. The Existing Alignment Alternative has the least damage to aquatic resources, 0.75 hectare (1.83 acres) of impact as compared to 2.62 hectares (6.48 acres) for the Southern Alignment Alternative.

In a comparative analysis, the Existing Alternative Alignment is clearly the superior alternative because, with minimization measures incorporated, it would not cause or contribute to degradation of the waters of the U.S. It has passed through numerous design iterations intended, in large part, to reduce its adverse effects on aquatic resources. The Southern Alignment Alternative would require much more significant encroachment into waters of the U.S. with attendant discharge of larger volumes of fill. Most of this encroachment is inherent in the route and consequent design requirements of the Southern Alignment Alternative and would therefore be less susceptible to successful avoidance by further design iterations.

Successful mitigation for the Southern Alignment Alternative's impacts would be more difficult to achieve and may not be possible. This is particularly the case with regard to the physical alteration of the riverine system and flow patterns, including flooding. Flooding would essentially overwhelm structural control mechanisms and BMPs intended to protect physical and chemical functions and values.

In addition, as discussed in detail above in the Alternatives Analysis, the Existing Alignment Alternative is the preferred alternative from a biological perspective, biological including functions and values of waters of the U.S. Although impacts to coastal California gnatcatcher critical habitat and to species individuals appear to be greater with the Existing Alignment Alternative, fewer permanent impacts to habitats would occur. The Existing Alignment Alternative's impacts to gnatcatcher critical habitat and to species individuals would not have significant adverse consequences. Permanent impacts to the critical habitats of least Bell's vireo and southwest willow flycatcher would be less under the Existing Alignment Alternative, as would the permanent impacts to the breeding habitat of the arroyo toad and for the potential rearing/breeding habitat and fish passage for the southern California steelhead.

The Southern Alignment Alternative presents a greater constraint to wildlife movement through the area. Currently, Old River Road is a local rural road with low traffic volumes. Locating the highway south of the river means a wider movement barrier with much higher traffic volumes. In addition, existing SR-76 would remain in place and be used for local traffic. The Southern Alignment Alternative would have crossed the river at South Mission Road, which may have further reduced the use of this important portion of a regional wildlife corridor. This new crossing, and the proximity of the alignment in the area of Little Gopher Canyon would have had edge effects, thereby reducing the width of the corridor. Overall, the Southern Alignment Alternative would have a greater impact to regional wildlife movement when compared to the Existing Alignment Alternative.

The Southern Alignment Alternative would encroach into 23.31 hectares (57.61 acres) of the San Luis Rey River and would deposit approximately 1,617,034 cubic meters (2,115,000 cubic yards) of fill. As a result, the Southern Alignment Alternative would have had a greater impact on suspended particulates and turbidity within the aquatic ecosystem.

Moreover, the Southern Alignment Alternative would have substantial adverse impacts to the San Luis Rey Downs Golf Course (an important Bonsall community resource and recreational focal point) and would have a significant floodplain encroachment due to the increased water surface elevation of the San Luis Rey River and Moosa Canyon Creek, increased flooding risk, and potential for incompatible floodplain development. These impacts are substantial adverse environmental consequences that the Existing Alignment Alternative avoids. Therefore, based on these reasons, the Existing Alignment Alternative is identified as the Least Environmentally Damaging Practicable Alternative.

Table 15 summarizes and compares the effects of the two build alternatives on aquatic resource functions and values for the two build alternatives. The No Action Alternative is omitted from Table 15 because it would not change current conditions relative to aquatic resources. The design of existing SR-76, however, did not incorporate features designed to protect the functions and values of aquatic resources, including waters of the U.S.

Table 15
Comparison of Alternative Impacts on Waters of the U.S.
after Incorporation of Impact Minimization Measures

Functional Component	Nature of Impacts	Comments
Physical and Chemical Functions and Values		
Substrate		
Existing Alignment Alternative		
Construction	Moderate; Sometimes Occurs; Temporary and Permanent; Adverse	Minor because of limited area of disturbance of substrate; occurs during construction; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.
Operation	Minor; Always Occurs; Permanent; Adverse	Minor because of limited area of footprint in substrate; permanent in footprint.

Functional Component	Nature of Impacts	Comments
Southern Alignment Alternative		
Construction	Severe; Sometimes Occurs; Temporary and Permanent; Adverse	Severe because of comparatively large area of disturbance of substrate; occurs during construction; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.
Operation	Severe; Always Occurs; Permanent; Adverse	Severe because of the relatively large area of fill placement in waters of U.S. with channelization and disturbance of flow patterns; permanent in footprint.
Water		
Existing Alignment Alternative		
Construction	Minor; Sometimes Occurs; Temporary and Permanent; Adverse	Minor because of limited modification of channels and flows and avoidance of river low-flow channel; occurs during construction; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.
Operation	Minor; Always Occurs; Permanent; Adverse	Minor because of limited encroachment (principally edge effects); permanent in footprint.
Southern Alignment Alternative		
Construction	Severe; Sometimes Occurs; Temporary and Permanent; Adverse	Severe because of large area of wetlands disturbed, with fragmentation and alteration of flow in river system; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.

Functional Component	Nature of Impacts	Comments
Operation	Severe; Always Occurs; Permanent; Adverse	Severe because of channelization, fragmentation of river system, interruption of tributaries, alteration of flow patterns; permanent under completed project footprint.
Suspended Particulates/Turbidity		
Existing Alignment Alternative		
Construction	Minor; Sometimes Occurs; Temporary and Permanent; Adverse	Minor because the area of disturbance in waters of the U.S. is relatively small and the implementation of BMPs; occurs during construction; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.
Operation	Minor; Always Occurs; Permanent; Adverse	Minor because of relatively small footprint in waters of the U.S. and the implementation of BMPs; permanent under completed project footprint.
Southern Alignment Alternative		
Construction	Severe; Sometimes Occurs; Temporary and Permanent; Adverse	Severe because flooding would overwhelm BMPs intended to prevent scour, erosion, and sedimentation; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.
Operation	Severe; Sometimes Occurs; Permanent; Adverse	Severe because flooding would overwhelm BMPs intended to prevent scour, erosion, and sedimentation; permanent but intermittent.

Functional Component	Nature of Impacts	Comments
Contaminants		
Existing Alignment Alternative		
Construction	Minor; Sometimes Occurs; Temporary and Permanent; Adverse	Minor because the area of disturbance in waters of the U.S. is relatively small and the implementation of BMPs; occurs during construction; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.
Operation	Minor; Always Occurs; Permanent; Adverse	Minor because of relatively small footprint in waters of the U.S. and the implementation of BMPs; permanent under completed project footprint.
Southern Alignment Alternative		
Construction	Severe; Sometimes Occurs; Temporary and Permanent; Adverse	Severe because flooding would overwhelm BMPs intended to prevent release of contaminants; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.
Operation	Severe; Sometimes Occurs; Permanent; Adverse	Severe because flooding would overwhelm BMPs intended to prevent release of contaminants; permanent but intermittent.
Biological Functions and Values		
Threatened and Endangered Species		
Existing Alignment Alternative		
Construction and Operation	Minor; Always Occurs; Permanent; Neutral	Minor and neutral because adequate mitigation during both construction and operation would be required by CDFG, USFWS, and other agencies; USFWS has issued a BO for this alternative concluding likely no jeopardy to sensitive species.

Functional Component	Nature of Impacts	Comments
Southern Alignment Alternative		
Construction and Operation	Minor; Always Occurs; Permanent; Neutral	Minor and neutral because adequate mitigation during both construction and operation would be required by CDFG, USFWS, and other agencies; could not be constructed without permits from those agencies.
Critical Habitats		
Existing Alignment Alternative		
Construction and Operation	Minor; Always Occurs; Permanent; Neutral	Minor and neutral because adequate mitigation during both construction and operation would be required by USFWS; USFWS has issued a BO for this alternative concluding likely no jeopardy to sensitive species.
Southern Alignment Alternative		
Construction and Operation	Minor; Always Occurs; Permanent; Neutral	Minor and neutral because adequate mitigation during both construction and operation would be required by USFWS through the Section 7 consultation process with ACOE prior to issuance of a Section 404 permit.
Fish, Crustaceans, Mollusks, and Other Aquatic Organisms		
Existing Alignment Alternative		
Construction	Minor; Sometimes Occurs; Permanent and Temporary; Adverse	Minor because there would be direct impacts to the relatively small area (1.35 acres) of wetlands impacted during construction; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.

Functional Component	Nature of Impacts	Comments
Operation	Minor; Sometimes Occurs; Permanent; Adverse	Minor because of BMPs to control volume and velocity of runoff discharge. Some residual adverse impact possible under extraordinary circumstances (e.g., BMP failure).
Southern Alignment Alternative		
Construction	Moderate to Severe; Sometimes Occurs; Permanent and Temporary; Adverse	Moderate because of impacts to 5.56 acres of wetlands, but severe in case of large rainfall event during construction; also severe because of channelization and alteration of river system flow patterns; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.
Operation	Severe; Sometimes Occurs; Permanent; Adverse	Severe when large rainfall events occur because flooding due to flooplain encroachment could cause offsite disturbance of waters and streambed substrates, with turbidity and release of contaminants.
Other Wildlife		
Existing Alignment Alternative		
Construction	Moderate; Sometimes Occurs; Temporary; Adverse	Moderate loss of habitat, fragmentation, edge effects, some mortality, and corridor interruption, moderated by required minimization measures.
Operation	Minor; Always Occurs; Permanent; Adverse	Minor because habitat-based mitigation required by wildlife agencies for impacts to listed species would benefit other species as well.

Functional Component	Nature of Impacts	Comments
Southern Alignment Alternative		
Construction	Severe; Sometimes Occurs; Temporary; Adverse	Severe because loss of habitat, fragmentation, edge effects, some mortality, and corridor interruption would occur due to acreage impacted in the river corridor and system, more difficult to moderate by minimization measures.
Operation	Moderate; Always Occurs; Permanent; Adverse	Minor because habitat-based mitigation required by wildlife agencies for impacts to listed species would benefit other species as well, but flooding could disrupt wildlife foraging, nesting, breeding, and migration.
Special Aquatic Sites		
Existing Alignment Alternative		
Construction	Minor; Sometimes Occurs; Permanent and Temporary; Adverse	Minor because there would be direct impacts to the relatively small area (1.35 acres) of special aquatic sites impacted during construction; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.
Operation	Minor; Sometimes Occurs; Permanent; Adverse	Minor because of BMPs to control volume and velocity of runoff discharge. Some residual adverse impact possible under extraordinary circumstances (e.g., BMP failure).

Functional Component	Nature of Impacts	Comments
Southern Alignment Alternative		
Construction	Moderate to Severe; Sometimes Occurs; Permanent and Temporary; Adverse	Moderate because of impacts to relatively large area of special aquatic sites (5.56 acres), but severe in case of large rainfall event during construction; also severe because of channelization and alteration of river system flow patterns; permanent under completed project footprint, temporary in disturbed areas outside completed project footprint.
Operation	Severe; Sometimes Occurs; Permanent; Adverse	Severe when large rainfall events occur because flooding due to flooplain encroachment could cause offsite disturbance of waters and streambed substrates, with turbidity and release of contaminants.
Human Use Characteristics		
Water Supplies, Fisheries, Water-Related Recreation, Aesthetics		
Existing Alignment Alternative		
Construction and Operation	Minor; Sometimes Occurs; Temporary; Neutral	No adverse effects on municipal and private water supplies, recreational and commercial fisheries, or water-related recreation. Some effects on aesthetics during construction.
Southern Alignment Alternative		
Construction and Operation	Moderate; Sometimes Occurs; Temporary; Adverse	No adverse effects on municipal and private water supplies, recreational and commercial fisheries, or water-related recreation. Some effects on aesthetics during construction and possibly during floods.

Functional Component	Nature of Impacts	Comments
Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves		
Existing Alignment Alternative		
Construction and Operation	Minor, Always Occurs, Permanent, Beneficial	No encroachment on any of these areas, other than providing easier access for users. Avoids encroachment into such areas and will be coordinated with development of the San Luis Rey River Park Master Plan.
Existing Alignment Alternative		
Construction and Operation	Minor, Always Occurs, Permanent, Beneficial	No encroachment on any of these areas, other than providing easier access for users. Avoids encroachment into such areas and will be coordinated with development of the San Luis Rey River Park Master Plan.

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APPENDIX G
WETLAND ASSESSMENT

(This appendix has been added since public review of the Draft EIR/EIS)

APPENDIX G
WETLAND ASSESSMENT:
ONLY PRACTICABLE ALTERNATIVE FINDING

INTRODUCTION

Executive Order (EO) 11990, dated May 24, 1977, established a national policy "to avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." Pursuant to EO 11990, the following Wetlands Assessment: Only Practicable Alternative Finding has been prepared.

The State Route 76 (SR-76) Melrose to South Mission Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) assessed five alternatives within the proposed project area. Those alternatives include: the Existing Alignment Alternative, identified as the Preferred Alternative; the Southern Alignment Alternative which would have greater impacts to waters and wetlands, floodplains [raising the water level nearly 1 meter (3 feet) avoided by the Preferred Alternative], biological resources, community impacts and visual impacts; the Split Facility Alternative would have greater impacts from out-of-direction travel, response times for emergency services (avoided by the Preferred Alternative), additional bridge construction and would have created an island effect around the San Luis Rey River, causing greater impacts to biological resources; the Wetland Avoidance Alternative would impact historic properties, used 4(f) resources (avoided by the Preferred Alternative), would have created greater visual impacts and additional project costs; the Groves variations would have adverse community impacts; impacted historic properties, used 4(f) resources (avoided by the Preferred Alternative), create greater impacts to biological resources and visual impacts; and, the No Build Alternative would have temporary indirect impacts from maintenance and roadway upkeep.

Throughout project development; implementation of the National Environmental Policy Act/Clean Water Act Section 404 Integration Process for Federal Aid Surface Transportation Projects Memorandum of Understanding (NEPA 404 MOU); and, the Safe, Accountable, Flexible, Efficient, Transportation Equity Act – a Legacy for Users (SAFETEA-LU) processes, Caltrans coordinated with the Federal Highway Administration (FHWA), the U.S. Army Corps of Engineers (ACOE), the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (USFWS), the California Department of Fish and Game (CDFG), the Regional Water Quality Control Board (RWQCB), the County of San Diego (County), local cities, stakeholders and the public to comment on, develop and screen these alternatives.

The proposed build alternatives for the project include: the Existing Alignment Alternative and the Southern Alignment Alternative, which would permanently impact between 0.75 hectares (1.83 acres) and 2.75 hectares (6.79 acres) of jurisdictional waters of the United States (U.S.) and between 6.62 hectares (16.35 acres) and 13.34 hectares

(32.96 acres) of jurisdictional waters of the State within the proposed project area. Therefore, the Existing Alignment Alternative was identified as the Preferred Alternative and the Least Environmentally Damaging Practicable Alternative (LEDPA).

PREFERRED ALTERNATIVE

As discussed above, the proposed highway improvement project was developed in consultation with federal and state resource agencies and stakeholders. Impacts to wetland resources resulting from implementation of the Preferred Alternative would permanently impact 0.75 hectares (1.83 acres) of jurisdictional waters of the U.S. and would permanently impact 6.62 hectares (16.35 acres) of jurisdictional waters of the State. Permanent impacts to hydrology and riparian vegetation in the form of the Ordinary High Water Mark (OHWM) areas under jurisdiction of the ACOE would be 0.03 hectares (0.06 acres). Temporary impacts from the Preferred Alternative include 1.75 hectares (4.31 acres) of jurisdictional waters of the U.S., including 1.55 hectares (3.82 acres) of wetlands, 0.18 hectares (0.45 acres) of non-vegetated waters and 0.02 hectares (0.04 acres) of hydrology and riparian vegetation in the form of the OHWM. These impacts would primarily be edge effects caused at bridge improvement sites and rip/rap armoring locations along the slopes nearest to the San Luis Rey River.

AVOIDANCE ALTERNATIVES

Wetland Avoidance Alternative

Numerous design solutions were considered during the project alternatives development process, including a complete avoidance alternative. The Wetland Avoidance Alternative would have avoided all impacts to waters including wetlands. This alternative had costs associated with it that would have added in excess of $130 million to the project budget for longer bridges over the San Luis Rey River, Bonsall and Ostrich Farms Creeks. Avoiding wetlands entirely would have impacted sensitive cultural resources and used 4(f) resources (which are avoided by the Preferred Alternative). The geometry required to connect the roadway to a longer bridge near East Vista Way would have required larger cuts to slopes, creating increased visual impacts, impacts to sensitive habitat, threatened and endangered wildlife and plant species in upland habitats, including one of the few remaining populations of San Diego Ambrosia, a federally listed species, which would be avoided by the Preferred Alternative. Under the complete avoidance alternative, bridge construction would still occur within areas of wetlands and waters, so even this alternative would produce temporary impacts. Since the Wetland Avoidance Alternative would add extensive costs to the project and would cause greater adverse impacts to sensitive cultural resources, use 4(f) resources, increase impacts to visual and sensitive species and their respective habitats than the Preferred Alternative.

No Build Alternative

The No Build Alternative would not have permanent impacts to wetlands or other jurisdictional waters. Its impacts to wetlands and other jurisdictional waters of the U.S.

and waters of the State would continue to be indirect and temporary over time as a result of routine road maintenance and upkeep. This alternative would not propose any changes to the existing number of lanes or the configuration of existing intersections along the corridor. Under the No Build Alternative traffic would continue to increase causing longer travel delays and further degrade level of service. Since the No Build Alternative makes no improvements to SR-76 and does not meet the purpose and need, it is not practicable.

Constraints to the project

The proposed SR-76 project is subject to constraints, which dictate the general placement of the viable alignment alternatives (those which would meet the project purpose and need). Those constraints include: the project beginning and ending points, the San Luis Rey River and its various tributary creeks, the river valley topography and the unincorporated community of Bonsall. These features constitute the geographical limits within which the proposed project could have been constructed and still function as desired. The alternative analysis identified and ultimately excluded alignments that would have had severe impacts to sensitive biological and cultural resources that exist within the project area. The project must begin at Melrose drive, previous improvements ended at this intersection with SR-76, following the alignment, the project ending point was determined using average daily traffic counts to the east and west of South Mission Road. Thereby supporting logical termini for all of the build alternatives. The San Luis Rey River is an important biological aspect of the entire river valley and presents the major constraint to the location of alternatives. There are several tributary creeks that support important biological resources and would require bridge improvements or reconstruction. Currently, the SR-76 roadway is located along the slopes of the San Luis Rey River valley and in some places is within the 100-year floodplain. This situation requires improvements to take place along the slopes of the existing roadway that are located away from the river. The unincorporated community of Bonsall is currently served by SR-76 functioning as a local street with commercial developments along both sides in downtown Bonsall from Olive Hill Road to South Mission Road. These businesses rely on being seen from the SR-76 roadway.

Minimization of wetland impacts

Minimization of wetland impacts was achieved by identifying the Existing Alignment Alternative as the Preferred Alternative. Although the Wetland Avoidance Alternative and the No Build would cause fewer wetland impacts, the Wetland Avoidance Alternative was not considered practicable for the reasons outlined above, and the No Build Alternative would not meet the project purpose and need and was found not to be practicable.

MEASURES TO MINIMIZE HARM

During the project development process, as discussed above, including the NEPA 404 MOU integration process, meetings with federal and state resource agencies provided

early involvement and assisted in the development of the most prudent alternatives. Alignments alternatives were developed to follow the existing SR-76 roadway alignment and Old River Road. Once it was recognized that wetlands could not be completely avoided, two build alternatives between Melrose Drive in Oceanside and South Mission Road in Bonsall were agreed upon for further study and development. Caltrans and the resource agencies agreed that the Split Facility Alignment should be eliminated since it presented excessive out-of-direction travel, may have increased emergency response times, and would have created an island effect around the San Luis Rey River thereby impacting important wildlife movement corridors and would have required nine bridge crossings including a new crossing of the San Luis Rey River to connect at the SR-76/South Mission Road intersection. The Wetland Avoidance Alternative was eliminated due to excessive costs, larger cuts to slopes, creating adverse visual impacts and impacts to sensitive species and their habitat. The Groves variations would have adverse community impacts to downtown Bonsall, impacted historic properties, used 4(f) resources, would not meet Caltrans and FHWA geometric standards, caused greater visual impacts, impacted sensitive species and their respect habitats and increased project costs. The meeting participants agreed that the Southern Alignment Alternative and the Existing Alignment Alternative should be brought forward for further detailed technical study. The Southern Alignment Alternative was brought forward because it was on a new alignment south of the river following a local County road, Old River Road. The Existing Alignment Alternative was brought forward because it was the existing highway route. These two alignment alternatives are virtually identical between Melrose Drive and East Vista Way then diverge to opposite sides of the San Luis Rey River as they progress east of East Vista Way. The Southern Alignment Alternative would then proceed along Old River road and bridge the San Luis Rey River to connect at the SR-76/South Mission Road intersection.

In a letter dated December 5, 2005, Caltrans requested concurrence on the range of alternatives and the resource agencies agreed that the Existing Alignment Alternative, the Southern Alignment Alternative and the No Build Alternative should be fully analyzed in the SR-76 Draft EIR/EIS. As survey data and studies for the Draft EIR/EIS were developed, every effort was made to avoid and minimize resource and wetland impacts.

The Preferred Alternative incorporates features that reduce impacts to biological resources, floodplains, water and wetlands and to the community of Bonsall, including shifting the alignment to reduce impacts to sensitive wetlands and waters while minimizing fragmentation impacts by contouring the existing SR-76 and avoiding additional bridge crossings. Installation of environmentally sensitive area fencing would limit construction activities near sensitive habitat within the project area. Further reductions in impacts to water quality would be achieved by installing permanent Best Management Practices (BMPs) to treat roadway run-off. Minimizing cuts to slopes reduces impacts to upland habitats. Any unavoidable impacts to ACOE and CDFG jurisdictional waters or wetlands would require compensatory mitigation. These impacts could be mitigated on-site via creation, restoration or enhancement. All reasonable and feasible measures to reduce impacts to wetlands have been incorporated into the design.

The Preferred Alternative's alignment and the ultimate right-of-way limits were adjusted as must as possible in order to reduce impacts to waters and wetlands.

Development of the proposed project would lead to unavoidable permanent and temporary, direct and indirect impacts to jurisdictional waters and wetland resources in the project area. These impacts would be considered adverse. On-site and off-site mitigation measures are proposed to minimize and offset the project's wetland impacts.

The following mitigation measures are proposed:

ESA fencing should be installed along the limits of grading prior to the start of construction, and grading should not occur beyond this fencing. Construction crews would be made fully aware of this boundary.

ESA fencing should be installed around the known population of San Diego ambrosia immediately south of the Existing and Southern Alignment Alternatives and west of East Vista Way to avoid inadvertent impacts to the species.

BMPs employed during construction would follow the applicable Caltrans guidelines and be detailed in the project's Storm Water Pollution Prevention Program (SWPPP). Specific plans would be reviewed by a biologist and modified, if necessary, prior to implementation. The biologist would have the ability to suggest changes to reduce the possibility of erosion/siltation or spills of chemicals/fuels that could potentially affect sensitive habitat areas, including (but not limited to) arroyo toad habitat.

Due to the sensitive habitats the project transverses and the sensitive species that live along the corridor, there are extensive impacts that cannot be avoided. After all efforts have been made to avoid and minimize impacts, compensatory mitigation measures would be used to mitigate for theses unavoidable impacts. Mitigation ratios and compensatory mitigation have not been agreed upon by the resource agencies at this time; however, the compensation ratios in the North County MSCP would be used as a baseline. Potential mitigation opportunities that have been identified within the San Luis Rey watershed are described below.

MHCP Recommended Compensatory Mitigation Ratios for Riparian and Wetlands

Vegetation Community	**Mitigation Ratios**
Riparian Habitat and Wetlands	no-net-loss
Southern Cottonwood Willow Riparian Forest	3:1
Disturbed Wetland/Giant Reed	1:1 to 2:1
Southern Coast Live Oak Riparian Forest	3:1
Southern Willow Scrub	1:1 to 2:1
Mule Fat Scrub	1:1 to 2:1
Open Water	1:1
Coastal and Valley Freshwater Marsh	1:1 to 2:1

- Direct temporary impacts to emergent wetlands (coastal and valley freshwater marsh) should be compensated at a minimum 1:1 mitigation ratio; direct permanent impacts to vegetated wetlands should be compensated at a minimum 1:1 mitigation ratio. Therefore, to minimally compensate for the direct permanent impacts of 0.1 acre to emergent wetlands under the Build Alternatives, 0.1 acre of wetland creation and/or restoration at a suitable site should be conducted and preserved. Temporary direct impacts could be mitigated at a 1:1 ratio via restoration, as needed, in place.

- Direct temporary impacts to other jurisdictional waters such as scrub/shrub wetland, disturbed wetland, unvegetated waters, and OHWM should be compensated at a minimum 1:1 mitigation ratio; direct permanent impacts to these jurisdictional waters should be compensated at a minimum 1:1 mitigation ratio.

- Shading impacts on jurisdictional waters should be compensated at a 1:1 ratio; mitigation would be required for shading of open water and vegetated washes.

- Because the riparian vegetation within the project study area provides nesting habitat for the least Bell's vireo, restoration/creation of riparian habitat along this portion of the San Luis Rey River would be preferred. Mitigation in or adjacent to the study area may provide additional habitat for the vireo and form a corridor connecting existing vireo habitat near SR-76 with the riparian woodland and scrub in the project area. In particular, the San Luis Rey River Flood Control Project identified areas immediately upstream of I-5 that would be appropriate for restoration and/or creation of riparian habitat.

- Creation of marsh should include salvaging any individuals of native hydrophytic vegetation that would be impacted during construction. In addition, multiple adjacent areas suitable for riparian restoration exist throughout the project study area.

- Restoration and enhancement of wetland should include removing patches of giant reed and tamarisk scrub within the project study area and replacing with willow cuttings or cottonwood saplings and/or other suitable native hydrophytic vegetation.

- Temporary impacts to ACOE and CDFG jurisdictional waters would be mitigated in place, at a minimum, at a 1:1 ratio with the same habitat type that was temporarily disturbed, also known as in kind mitigation.

- Potential temporary indirect impacts, such as construction-generated fugitive dust, erosion, and sedimentation, would be mitigated through standard BMPs, such as temporary construction fencing and signage, dust abatement measures, and implementation of an approved erosion control plan and an approved SWPPP.

All of the mitigation opportunities discussed below have been identified as potential mitigation sites for the project. These properties have been presented to the resource agencies and have been approved as early action mitigation projects to be completed in advance of the roadway construction. These sites are proposed as a comprehensive package that would preserve and enhance key parcels along the San Luis Rey watershed and create new riparian and upland habitat to offset losses that would result from the project. Caltrans would coordinate with the legal jurisdictions to own and manage the sites in perpetuity. Caltrans would also provide an endowment for maintenance and monitoring.

- The first area is known as the Groves property and is located at the southwest corner of SR-76 and Olive Hill Road in the community of Bonsall. A majority of the area contains designated critical habitat for the threatened coastal California gnatcatcher. Approximately 72.84 hectares (180 acres) of coastal sage scrub occurs on-site with 33.18 hectares (82 acres) categorized as disturbed. This property also consists of 4.45 hectares (11 acres) of coast live oak woodland and 20.23 hectares (50 acres) of nonnative grassland. This property is located in proximity to the San Luis Rey River, which supports a significant arroyo toad population. This property does not provide breeding habitat for the toad, but it does contain appropriate habitat for burrowing, dispersing, and foraging. Access control has been built at the site.

- The second area is the Morrison property, totaling about 48.97 hectares (121 acres), and located southeast of Gird Road and SR-76 in Bonsall. The San Luis Rey River crosses the southern portion of this property, and both the arroyo toad and the endangered least Bell's vireo have been documented on-site. The property has approximately 1.13 hectares (2.8 acres) of freshwater marsh, 15.66 hectares (38.7 acres) of riparian forest, 29.95 hectares (74 acres) of riparian scrub, 1.46 hectares (3.6 acres) of disturbed habitat, and 2.14 hectares (5.3 acres) of nonnative grassland. Due to the presence of riparian habitat, the endangered southwestern willow flycatcher may use the site. Enhancement and restoration of the site may include removing exotics, maintaining and creating friable soils for toads, creating willow scrub in appropriate areas, controlling illegal access, installing controlled access for hiking and equestrian opportunities, and establishing a San Diego ambrosia population.

- The third area is the Singh property and totals 24.28 hectares (59.99 acres) southeast of Sleeping Indian Road and North River Road. It is bisected by the San Luis Rey River in the northeastern area of Oceanside. Currently, the property is being used to grow row crops. Caltrans proposes to lower the topography to hydrologically functional elevations before planting the site. There is potentially 15.34 hectares (37.9 acres) of riparian habitat creation, 2.23 hectares (5.5 acres) of riparian and freshwater marsh restoration, and 5.46 hectares (13.6 acres) of coastal sage scrub buffer restoration.

- The Zwierstra property is the fourth area and is located along the north side of the SR-76 between Melrose Drive and East Vista Way. It is about 7.84 hectares (19.38 acres), 1.62 hectares (4 acres) of which are riparian forest. The remainder has been in use as a dairy farm and a residence. There is the potential for 2.71 hectares (6.7 acres) of riparian habitat creation, 1.62 hectares (4.0 acres) of riparian restoration, and 2.83 hectares (6.99 acres) of upland restoration.

- The fifth property is the Pilgrim Creek mitigation site, located along Pilgrim Creek, which is a tributary to the San Luis Rey River. The stretch of Pilgrim Creek on the site supports approximately 3.97 hectares (9.8 acres) of willow-dominated riparian habitat. Coastal sage scrub, including 14 hectares (34.6 acres) of restored habitat, covers the slope bordering the site to the west, and the center of the site supports riparian vegetation planted in 1996 within a 20.15-hectare (49.8-acre) restoration area as well as 0.60 hectare (1.5 acres) of freshwater marsh. An additional small cell of planted riparian vegetation lies between Pilgrim Creek and Douglas Drive on the east side of the creek. The site has 1.98 hectares (4.9 acres) of available mitigation credit.

CONCLUSION

Based on the above considerations, it is determined that there is no practicable alternative to the proposed SR-76 highway construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

APPENDIX H
BIOLOGICAL OPINION

(This appendix has been added since public review of the Draft EIR/EIS)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

In Reply Refer To:
FWS-SDG-08B0136-08F0900

OCT 01 2008

Rush Abrams
California Department of Transportation
District 11
4050 Taylor Street
San Diego, California 92110

Subject: Formal Section 7 Consultation on the State Route 76 Melrose Drive to South Mission Highway Improvement Project, San Diego County, California

Dear Ms. Abrams:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed State Route 76 (SR-76) Melrose Drive to South Mission Highway Improvement Project. In accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*), the consultation concerns the possible effects of the project on the following federally-listed as threatened or endangered species: arroyo toad (*Bufo californicus*), southwestern willow flycatcher (*Empidonax traillii extimus;* flycatcher) and its designated critical habitat, coastal California gnatcatcher (*Polioptila californica californica*; gnatcatcher) and its designated critical habitat, least Bell's vireo (*Vireo bellii pusillus*; vireo) and its designated critical habitat, San Diego ambrosia (*Ambrosia pumila*; ambrosia), and Stephens' kangaroo rat (*Dipodomys stephensi*; kangaroo rat).

The California Department of Transportation (Caltrans) request for initiation of formal consultation was dated May 21, 2008, and received in our office on May 22, 2008. On October 1, 2008, we received comments from Caltrans on the draft Biological Opinion.

By analyzing the project description, the distribution of species, and the potential effects to listed species, the Service has determined that, provided the description of the proposed action and conservation measures are implemented, the proposed project may affect, but is not likely to adversely affect the kangaroo rat. Therefore, this species will not be addressed further in this opinion. Should project plans change or if this species is detected within the project footprint, reinitiation of consultation would be necessary to evaluate potential effects to this species.

This biological opinion is based on the information from the following sources: 1) the *Final Biological Assessment for the SR-76 Melrose to South Mission Highway Improvement Project,*

prepared by Caltrans (2008); 2) the *Draft Environmental Impact Report/Environmental Impact Statement for the State Route 76 Melrose to South Mission Highway Improvement Project,* prepared by Caltrans (2007); and 3) letters, memorandums, electronic mail messages, and maps. A complete decision record of this consultation is on file at the Carlsbad Fish and Wildlife Office.

The proposed project occurs partially within the plan boundaries of each of the following Natural Community Conservation Planning (NCCP)/Habitat Conservation Plan (HCP) areas: 1) the Multiple Habitat Conservation Program (MHCP), dated March 2003 (AMEC and CBI 2003); 2) the City of Oceanside's draft Subarea Plan, dated 2006 (AMEC and CBI 2005); and, 3) the County of San Diego's North County Multiple Species Conservation Plan (NCMSCP; in preparation). Based on our review of the project description and proposed conservation measures, the proposed activities of the State Route 76 Melrose Drive to South Mission Highway Improvement Project are consistent with the applicable NCCP/HCP plans.

In the enclosed biological opinion, we have determined that the proposed activities of the State Route 76 Melrose to Mission project are not likely to jeopardize the continued existence of arroyo toad, gnatcatcher, flycatcher, vireo, or ambrosia, nor destroy or adversely modify gnatcatcher, flycatcher, or vireo critical habitat.

If you have any questions or concerns about this biological opinion, please contact Kurt Roblek or Janet Stuckrath of my staff at (760) 431-9440.

Sincerely,

for Karen Goebel
Assistant Field Supervisor

BIOLOGICAL OPINION

STATE ROUTE 76
MELROSE DRIVE TO SOUTH MISSION
HIGHWAY IMPRPOVEMENT PROJECT

FWS-SDG-08B0136-08F0900

U.S. Fish and Wildlife Service
Department of the Interior

Table of Contents

1. CONSULTATION HISTORY

A variety of meetings and correspondence occurred during project negotiation. The following chronology reflects a summary of significant events. A complete record of this consultation is on file at the Carlsbad Fish and Wildlife Office.

Sept 2005-Dec 2006	Bi-monthly coordination meetings between Caltrans, Army Corps of Engineers, Environmental Protection Agency, Regional Water Quality Control Board, California Department of Fish and Game and Federal Highway Administration to assist in implementing the NEPA/404 MOU Integration Process. The proposed project's Purpose and Need, Selection Criteria, and Range of Alternatives were developed and refined during these meetings in order to minimize impacts to biological resources.
August 4, 2006	Service provided Caltrans with concurrence that the SR-76 Widening Projects' proposed mitigation parcels are biologically appropriate to offset adverse affects to the arroyo toad, gnatcatcher, vireo, flycatcher, ambrosia and their habitats.
September 13, 2006	Service provided Caltrans with a list of species and their critical habitats expected to be present in or near the proposed action area.
January 3, 2007	Service provided Caltrans concurrence on the SR-76 Melrose to Mission Highway Improvement Project range of alternatives carried forth and into the National Environmental Policy Act (NEPA) review.
September 21, 2007	Service provided Caltrans with concurrence on the geotechnical borings for the SR-76 Melrose to Mission Highway Improvement Project on September 21, 2007.
December 3, 2007	Service provided comments to Caltrans on the Draft Environmental Impact Report/Environmental Impact Statement for the SR-76 Melrose to Mission Highway Improvement Project.
December 20, 2007	Service consulted informally on four geotechnical boring locations along the San Luis Rey River.
January 18, 2008	Service provided Caltrans with concurrence on additional geotechnical borings for the proposed San Luis Rey River Bridge crossing as part of the SR-76 Melrose to Mission Highway Improvement Project.
September 2008	Service and Caltrans finalized the project description and conservation measures.

2. DESCRIPTION OF THE PROPOSED ACTION

Caltrans proposes to widen 5.8 miles of the existing two-lane SR-76 in northwest San Diego County (Figure 1). The project area is located in the San Luis Rey River valley between Melrose Drive and South Mission Avenue (Figure 2). The western 1.5 miles are located in the Oceanside city limits, while the remaining 4.3 miles to the east are located in unincorporated San Diego County. The new highway would directly impact a total of approximately 255 acres of the San Luis Rey River Valley and result in four travel lanes (two 12-ft lanes in either direction), with right-of-way (ROW) and grading to ultimately accommodate a six lanes facility, if it is ever needed (Figures 3-10). Eight-foot wide outside shoulders would be constructed to provide for roadside safety as well as for bicycles and pedestrians while not precluding emergency parking. The westbound and eastbound lanes would be separated by approximately 22 feet, of which 10-feet in each direction would be paved inside shoulder and the remaining 2 feet of width will be a 32" high barrier. There would be a ROW area requirement of 163 acres including both existing and new Right of way.

Local intersections would be provided at Melrose Drive, Singh Road, East Vista Way/Old River Road, North River Road, Via Montellano, Olive Hill Road/Camino Del Rey, and South Mission. The connection between the proposed SR-76 Melrose to South Mission project and the SR-76 South Mission to Interstate 15 project is currently under study with options to have the connection accommodate alignment either north or south of the river.

2.1 Design Features and Elements

The Existing Alignment (preferred alternative) includes the following design features and elements.

- SR-76 roadway transition from the existing highway to the Existing Alignment Alternative would begin approximately 0.5 mile west of the SR-76/Melrose Drive intersection and extend approximately 0.6 mile east of the SR-76/South Mission Road intersection.

- Earthwork quantities are estimated to be approximately 1,110,000-cubic Meters of cut and approximately the same of fill. Fill slopes will generally be located on the non-river side of the San Luis Rey River floodplain between the river and the proposed SR-76. In an effort to minimize environmental impacts, 1:1 1/2slopes or flatter would be used instead in the cut areas and 1:2 slopes in the fill versus the standard of 1:4 slopes standards.

- Final cut-and-fill slopes would be graded to provide natural looking topography, where feasible.

- Permanent low sodium lights will be installed at all intersections.

- Turn lanes will be provided at the following intersections: Melrose Drive, Singh, East Vista Way, Via Montellano, Olive Hill Road, South Mission Road, and North River Road.

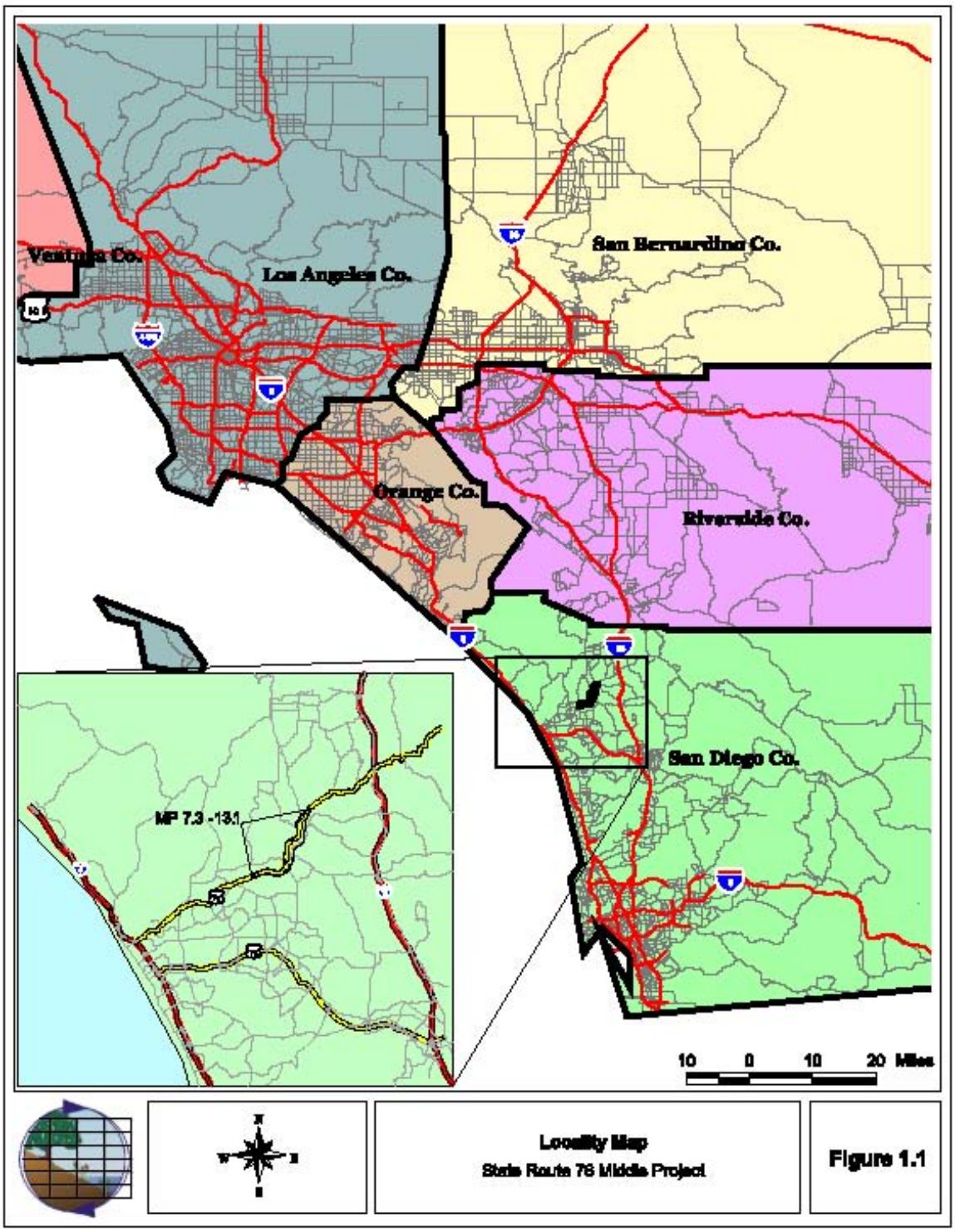

Figure 1. Locality Map

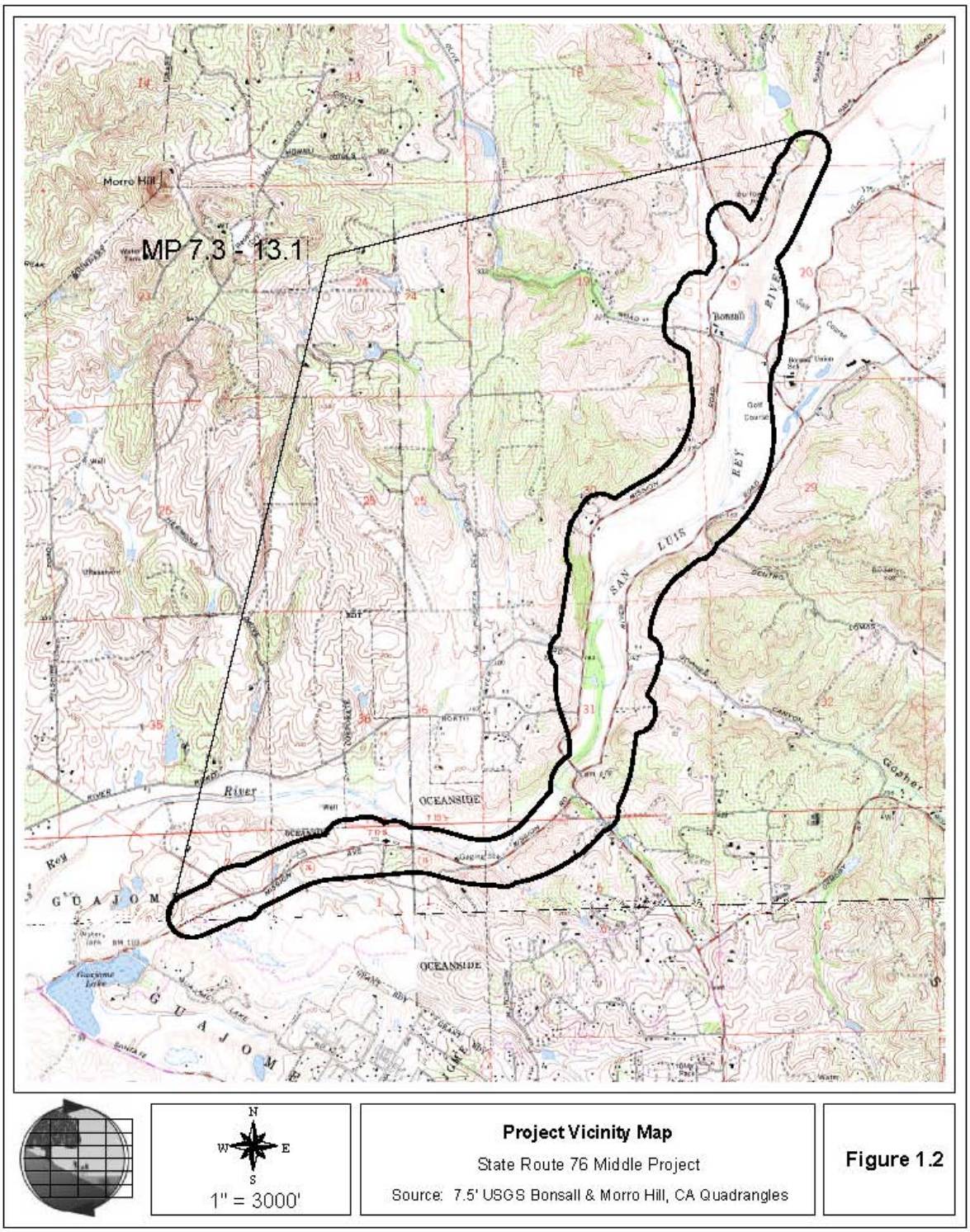

Figure 2. Vicinity Map

- Holly Lane will be converted to a right in right out, due to the complex motorist movement necessary to access SR-76 and the close proximity of North River Road. Vehicle access to the other direction will be provided via North River Road. A pedestrian path will be provided between the cul-de-sac and the highway.

- Jeffries Ranch Road will be converted to a cul-de-sac. Vehicle access to the highway will be provided via the connection from Old Ranch Road, Appaloosa Way, and Spur Avenue to Melrose Drive.

- Several short stretches of the existing SR-76 will be decommissioned as part of the proposed project; immediately west of the proposed Singh Road, between Jeffries Ranch and East Vista Way, immediately west of the Camino Del Rey intersection, and immediately south of Sweetgrass Lane (Figures 3-10).

2.2 Bridges – Wildlife Crossings

- Wildlife directional fencing and arroyo toad exclusionary fencing will generally be constructed between the San Luis Rey River and SR-76. Arroyo toad fencing will start at the existing San Luis Rey River Bridge and continue upstream to the end of the project (Figure 11).

- The existing San Luis Rey River Bridge, which is 1,328 ft long and 43.5 ft wide, will be maintained for westbound traffic. One new bridge located to the east of the existing bridge, will be built for eastbound traffic. The bridges will be separated by a gap that varies between 49 and 82 ft. During construction of the new bridge, eastbound and westbound traffic will use the existing bridge.

- The new eastbound bridge at the San Luis Rey River will be 1,677 ft long and ranges in width from approximately 50-60 feet and will have two 12-ft through lanes, one 12-ft channelization lane, one 10-ft outside shoulder, and one 10-ft inside shoulder. The support columns would be circular and parallel to the river flow. It is expected that two columns will be needed at each support location.

- Wildlife crossings from the San Luis Rey River to the Groves property would be constructed to provide additional wildlife movement opportunities. These crossings would be located at two drainages, one on the east and the other along the western edge of the property along SR-76. The westernmost crossing would be a bridge structure providing wildlife crossing 12 ft high x 25 ft wide x 111 ft long. The eastern crossing would be a reinforced concrete box (RCB) culvert 14 ft wide x 10 ft high x 174 ft long.

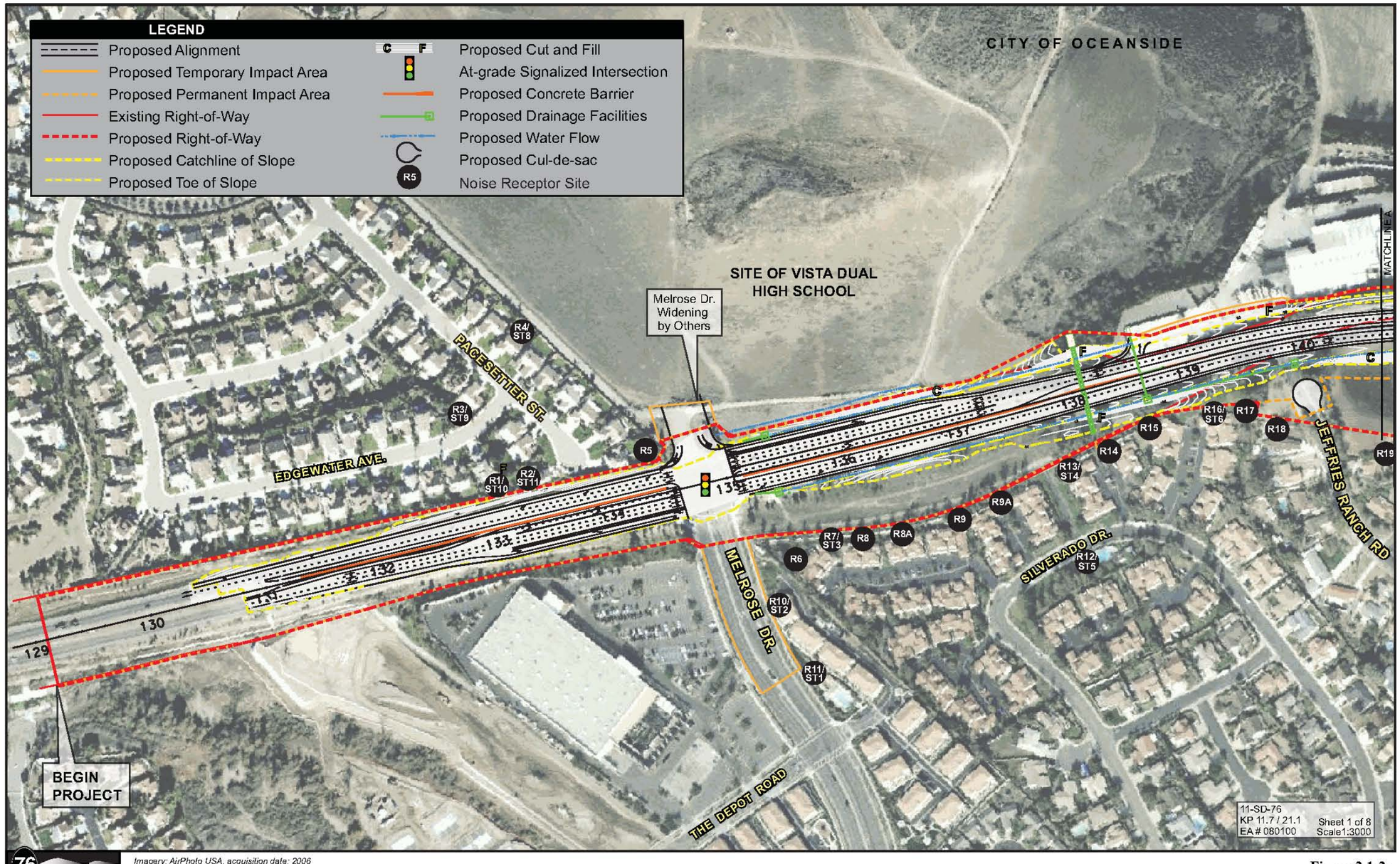

Figure 2.1-2a

SR-76 Middle Project Features Map
Proposed Existing Alignment (preferred) Alternative

Figure 3. SR-76 Middle Project Features Maps

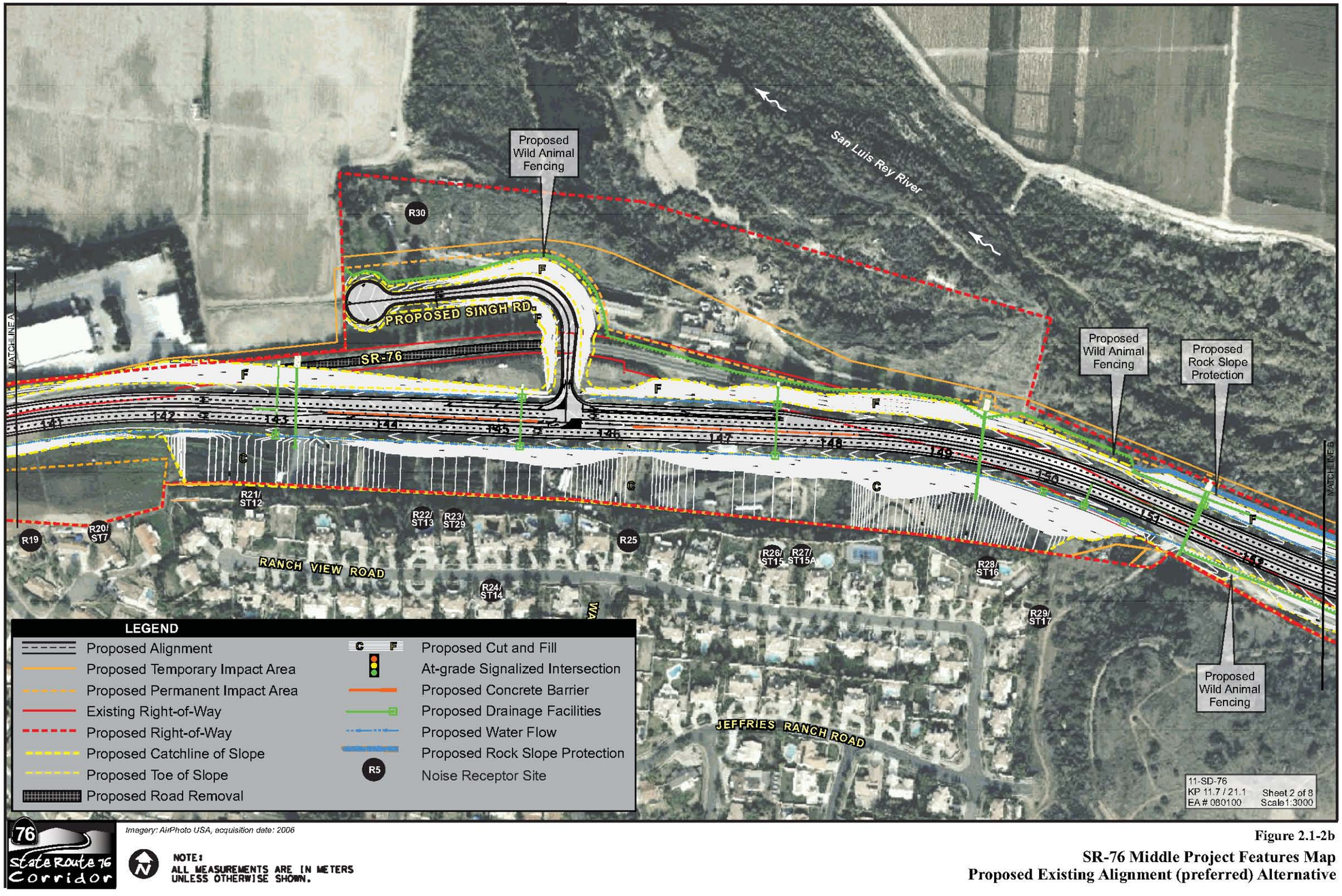

Figure 2.1-2b
SR-76 Middle Project Features Map
Proposed Existing Alignment (preferred) Alternative

Figure 4. SR-76 Middle Project Features Map

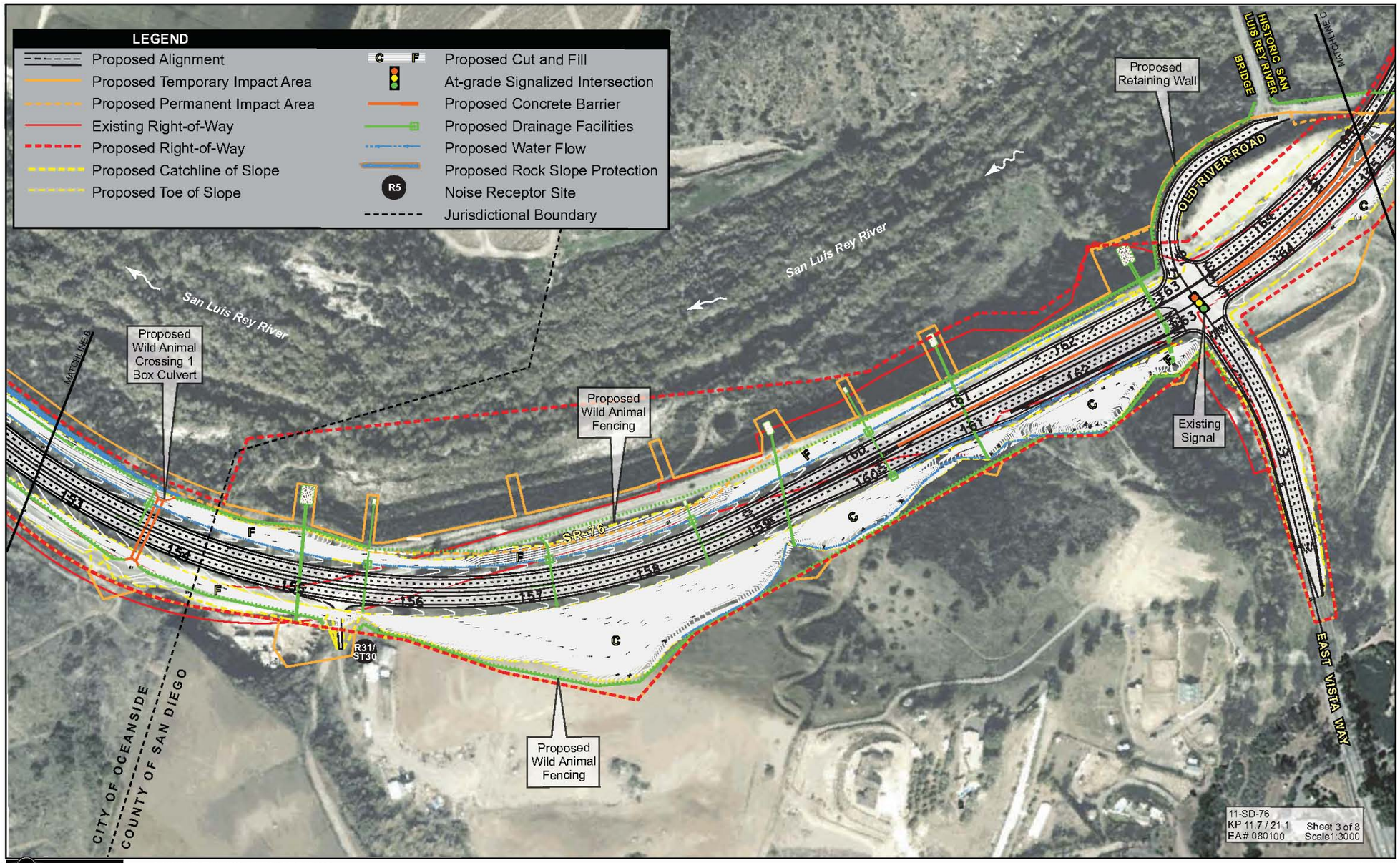

Figure 2.1-2c
SR-76 Middle Project Features Map
Proposed Existing Alignment (preferred) Alternative

Figure 5. SR-76 Middle Project Features Map

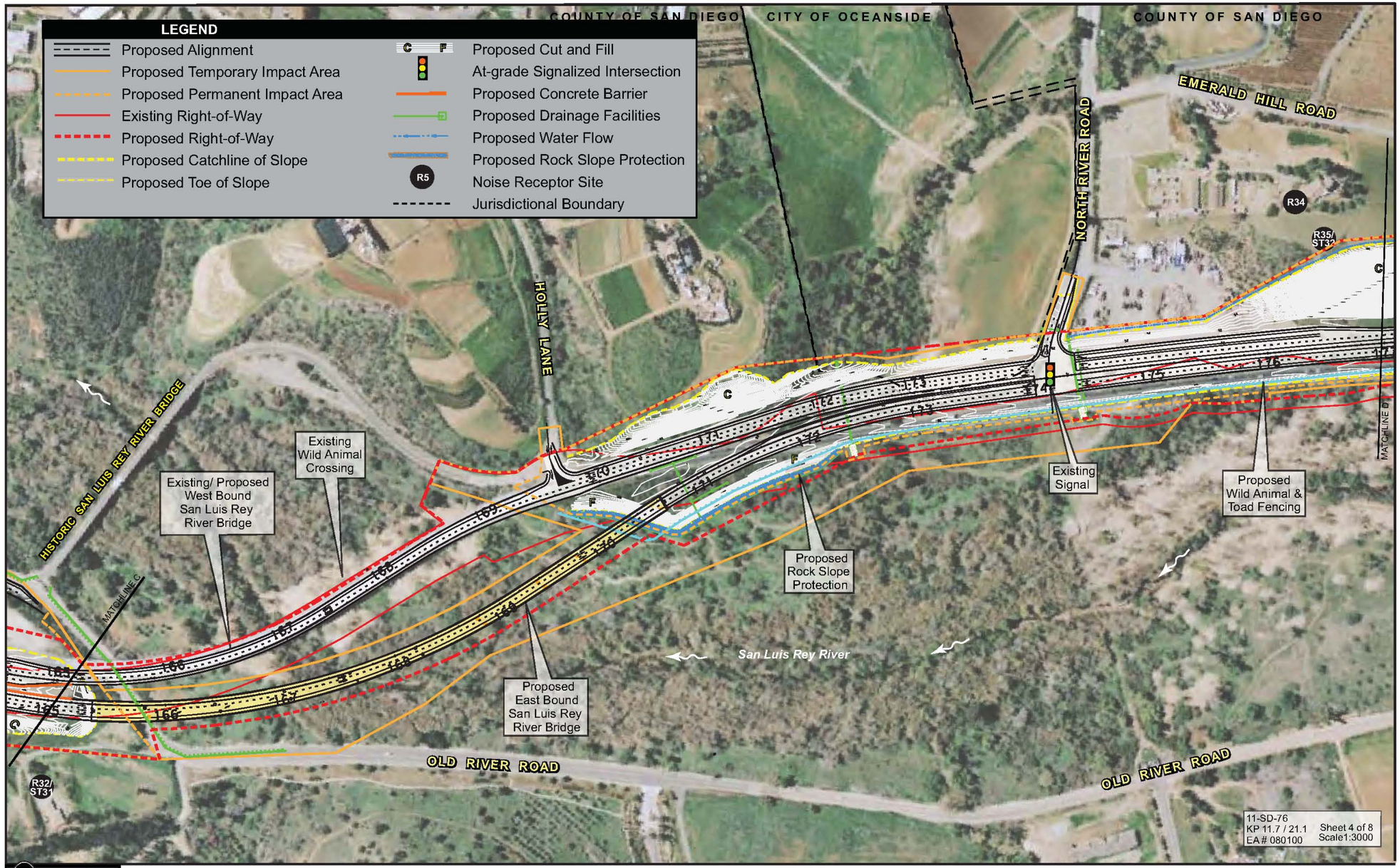

Figure 2.1-2d
SR-76 Middle Project Features Map
Proposed Existing Alignment (preferred) Alternative

Figure 6. SR-76 Middle Project Features Map

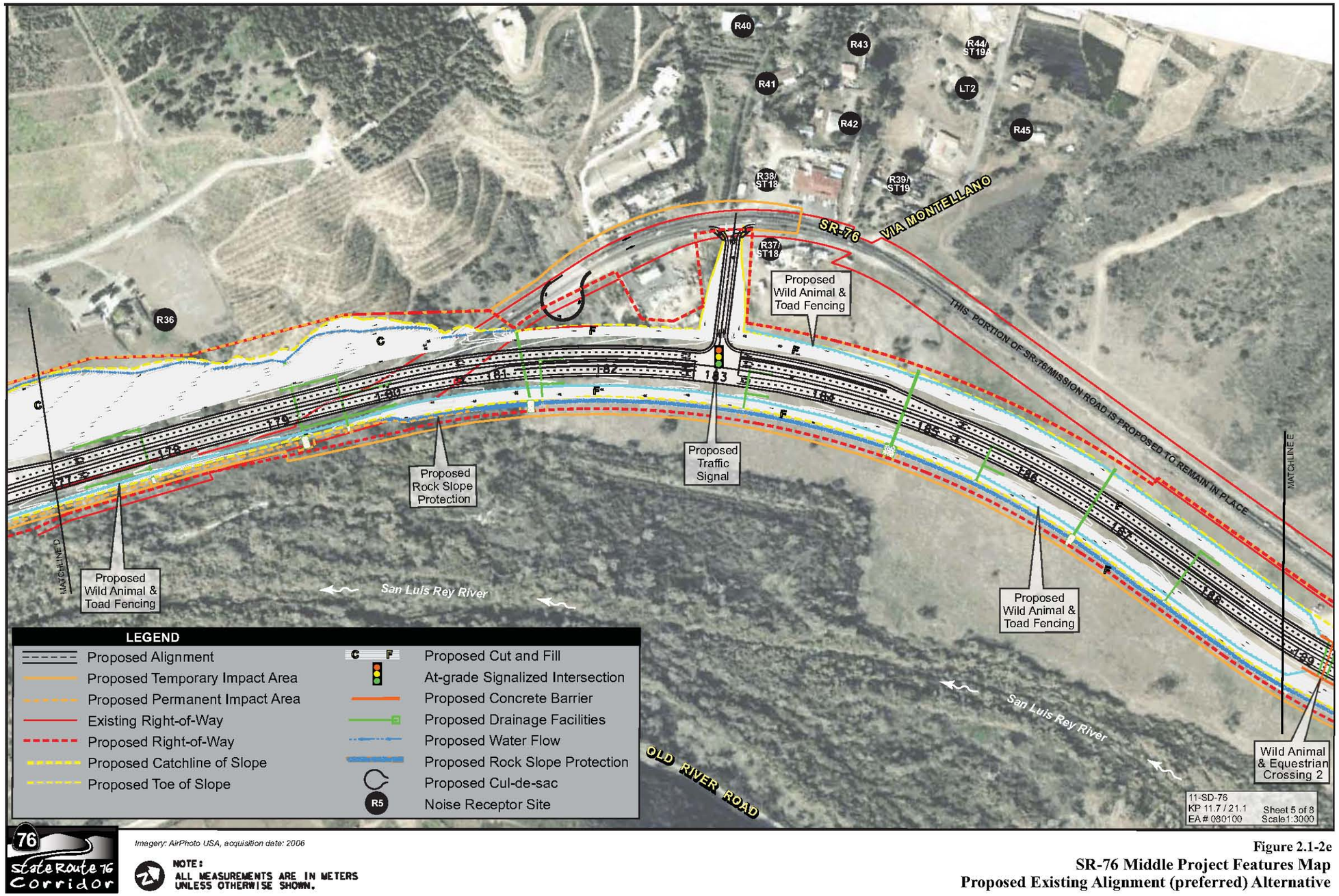

Figure 2.1-2e
SR-76 Middle Project Features Map
Proposed Existing Alignment (preferred) Alternative

Figure 7. SR-76 Middle Project Features Map

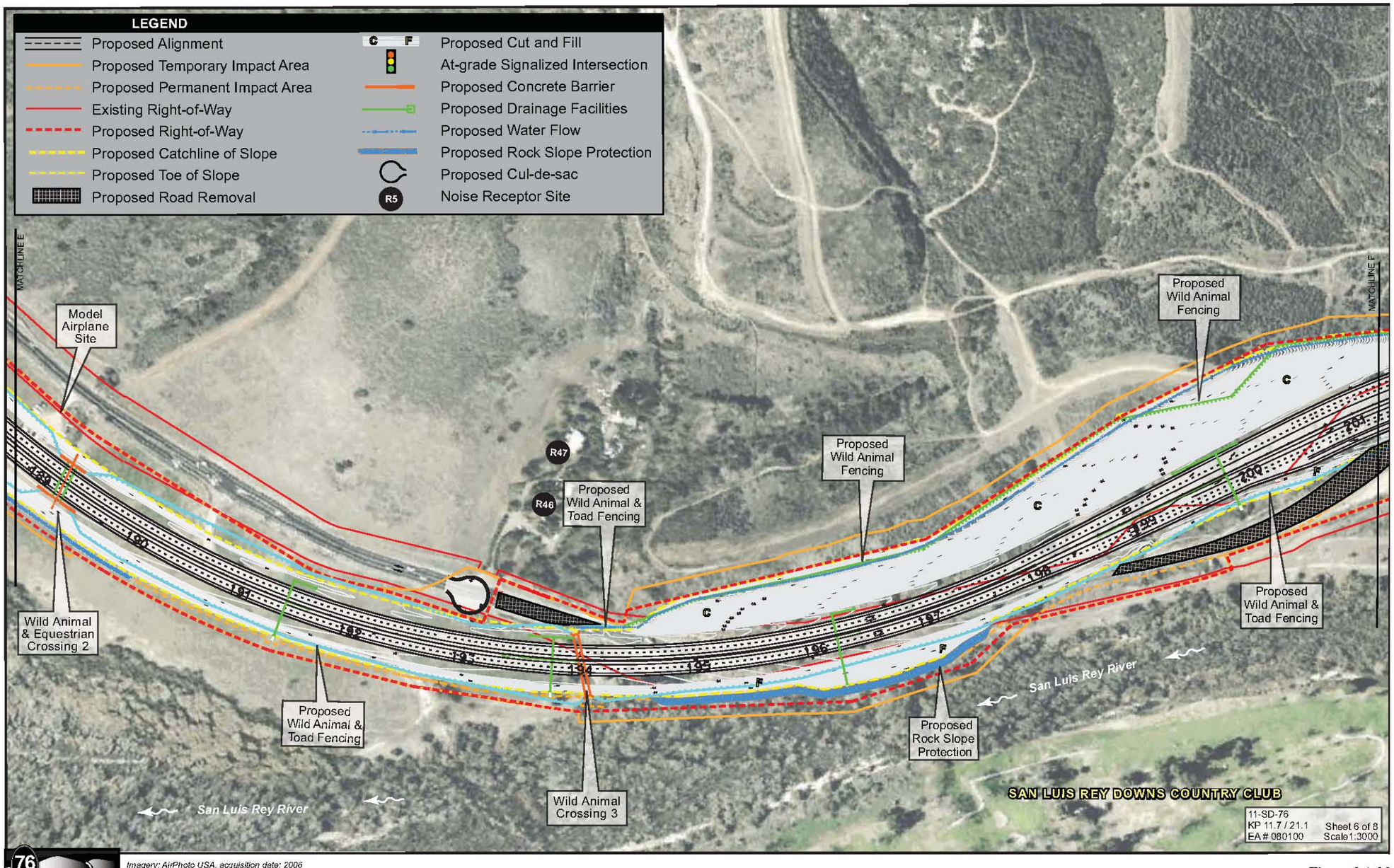

Figure 2.1-2f
SR-76 Middle Project Features Map
Proposed Existing Alignment (preferred) Alternative

Figure 8. SR-76 Middle Project Features Map

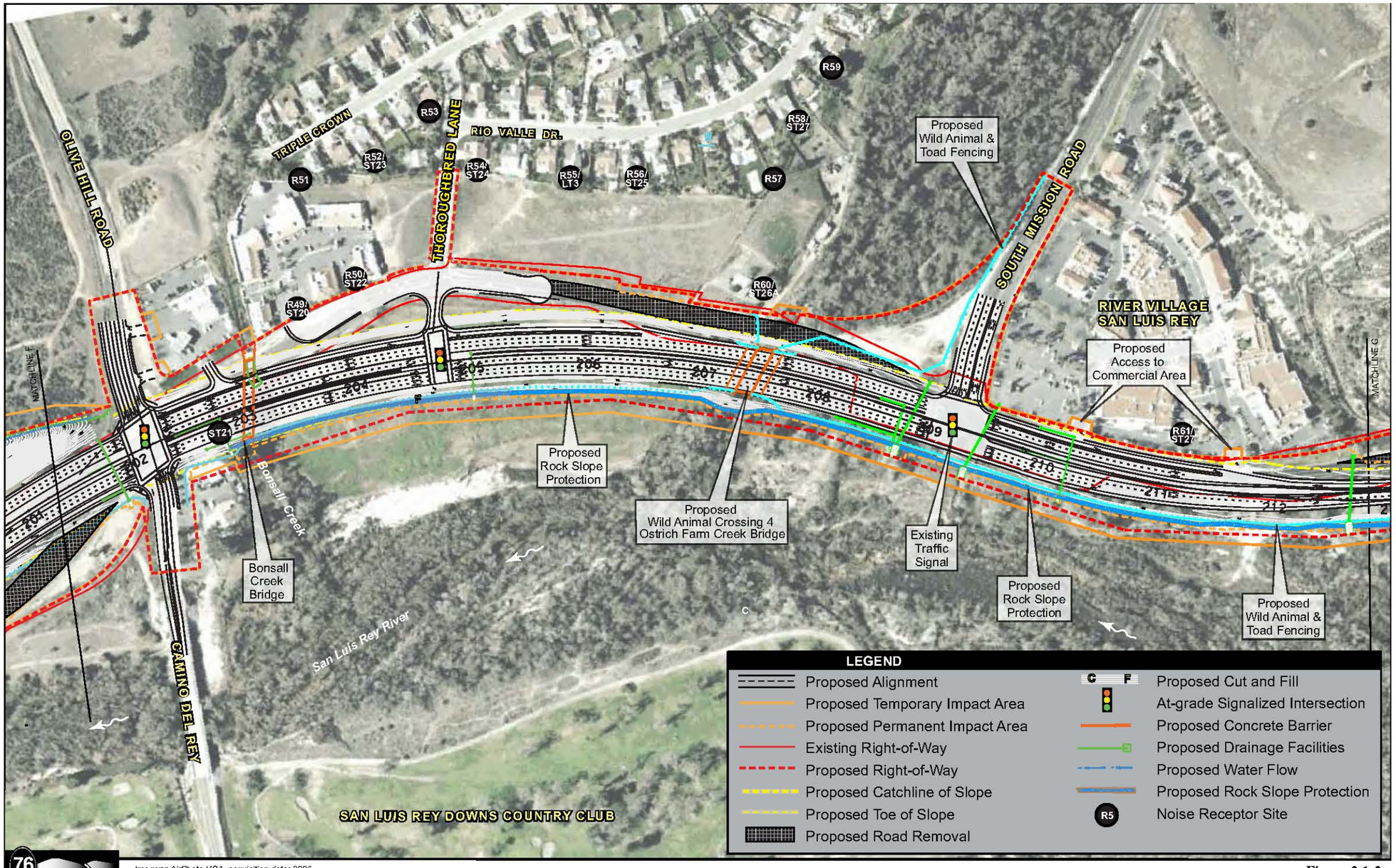

Figure 2.1-2g
SR-76 Middle Project Features Map
Proposed Existing Alignment (preferred) Alternative

Figure 9. SR-76 Middle Project Features Map

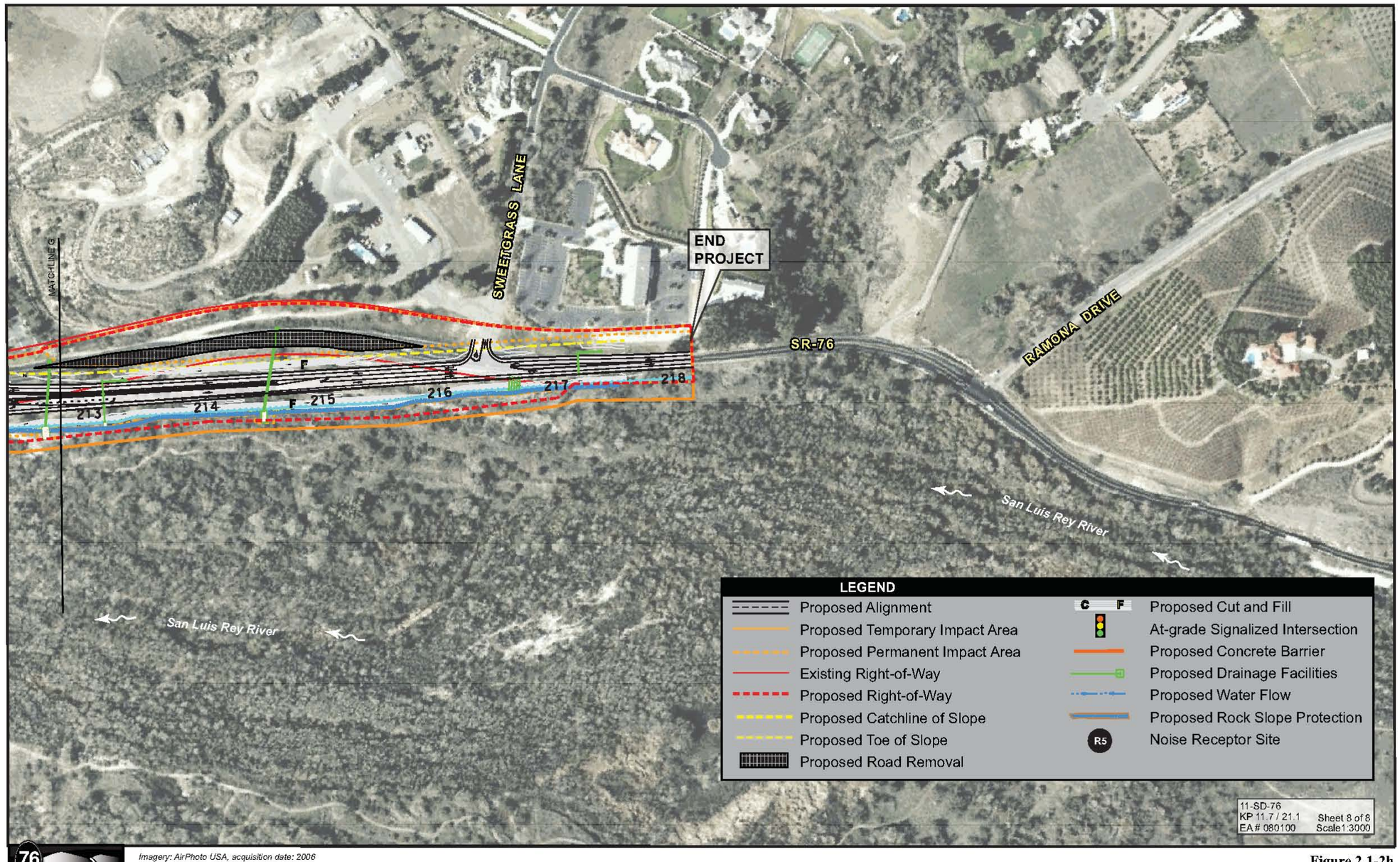

Figure 10. SR-76 Middle Project Features Map

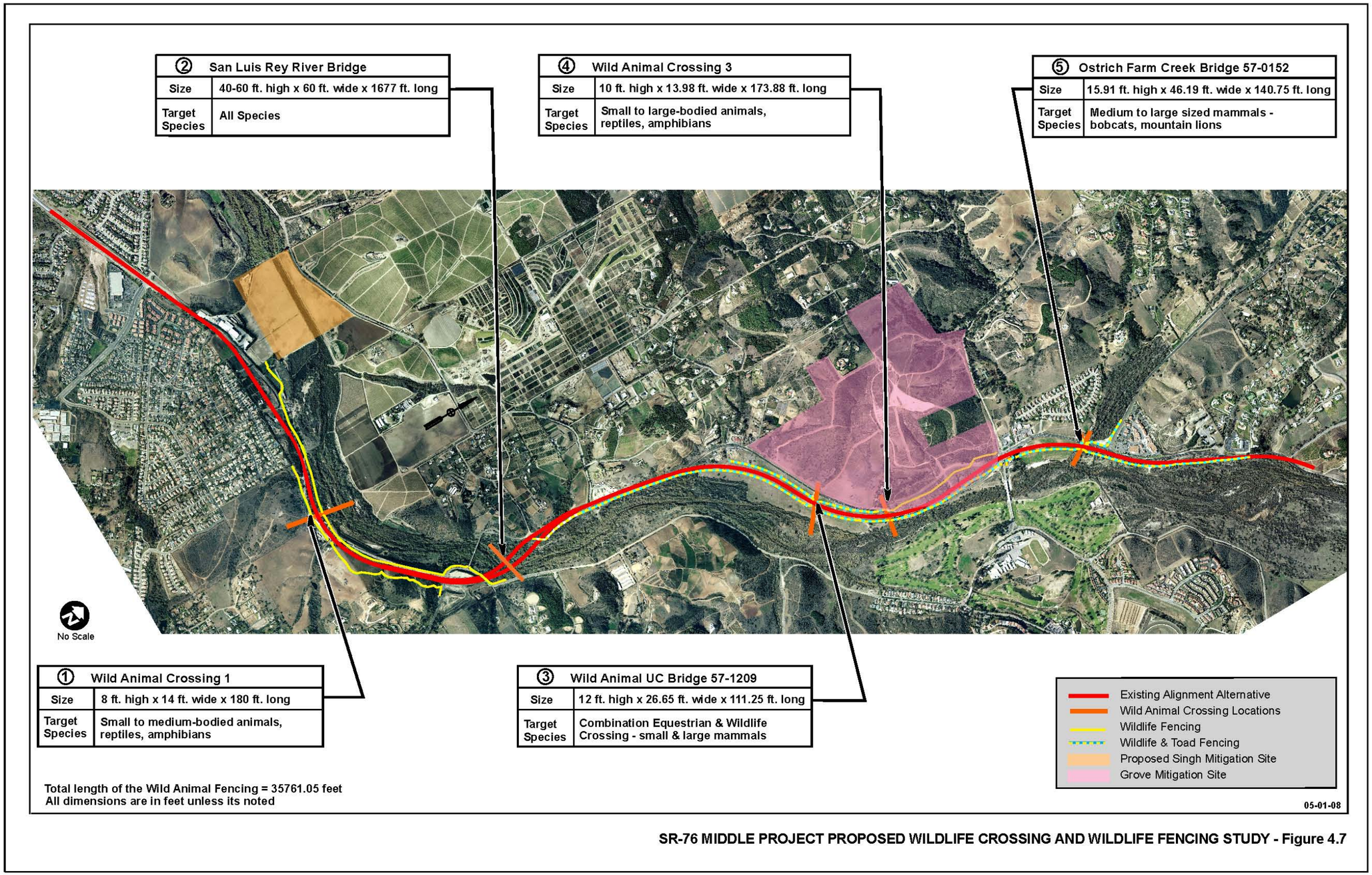

Figure 11. Proposed Wildlife Crossing and Wildlife Fencing Study

- The existing Bonsall Creek Bridge is a double cell, RCB culvert approximately 23 ft wide. The new bridge will be approximately 157 ft wide and 23 ft long and maintain four 12-ft travel lanes, two 12-ft channelization lanes, one 12-ft westbound right turn lane, two eastbound 12 foot turn lanes, two 10-ft outside shoulders, one 10-ft inside shoulder, one 4-ft inside shoulder, and one 2-ft wide concrete median barrier.

- The existing Ostrich Farm Creek Bridge is a four cell, RCB culvert approximately 45 ft wide. The bridge will be demolished and a new bridge constructed. It will be 6 ft long, 125 ft wide, and constructed with four 12-ft through lanes, two 12- ft channelization lanes, two 12-ft eastbound left turn lanes, two 10-ft outside shoulders, one 4- ft inside shoulder, one 10-ft inside shoulder, and a 2-ft wide concrete median barrier. A soft bottom will exist under the bridge

- A drainage culvert located north of Via Montellano will be constructed 13.8 ft wide and 9.8 ft high to facilitate wildlife movement.

2.3 Ambrosia Translocation

Ambrosia from the Marron mitigation site (UTM 477541.31m E, 3679659.98m N) will be transplanted to the Morrison property. Approximately twenty percent (20%) of the existing ambrosia will be removed and transplanted into a suitable area on the receiver site.

2.4 Project Phasing

Project construction is expected to occur between winter 2009 and summer 2012, and will be implemented in four phases.

- Phase 1: Construct SLR River bridge (expected to begin winter 2009)
- Phase 2: Melrose to East Vista Way (begin 2010)
- Phase 3: Olive Hill Road to South Mission Road, including Bonsall and Ostrich Creek bridges (expected to begin summer 2010)
- Phase 4: East Vista Way to Olive Hill Road, including San Luis Rey River Bridge (expected to begin fall 2010)
- Completion of all phases is expected by the end of 2012

The proposed project will impact 255 acres, consisting of permanent direct impacts to 1.11 acres of mule fat scrub, 0.13 acre of southern willow scrub, 0.003 acre of disturbed wetland, 18.33 acres of southern cottonwood willow riparian forest, 3.09 acres of southern coast live oak riparian forest, 24.36 acres of coastal sage scrub, 13.28 acres of disturbed coastal sage scrub, 0.72 acre of coast live oak woodland, and 43.17 acres of non-native grassland (Table 1). Additionally, the proposed project will result in permanent indirect impacts to 190.37 acres, consisting of 1.25 acres of southern willow scrub, 4.9 acres of disturbed wetland, 62.84 acres of southern cottonwood willow riparian forest, 6.57 acres of south coast live riparian forest, 0.07

acre of coastal valley freshwater marsh, 32.23 acres of coastal sage scrub, 16.59 acres of disturbed coastal sage scrub, and 0.67 acre of coast live oak woodland.

Mitigation for permanent project effects will occur under one of two scenarios, Option A or Option B. Further detail is provided in the Conservation Measures.

The analysis of project impacts on listed species was based on the final highway alignment (as of February 2008) and the available biological resource data for the Biological Survey Area (BSA) (Tables 1 and 2). The assessment relies on survey results obtained during field efforts from 2002 through 2007.

Table 1. Vegetation Community and Cover Type Impacts

Vegetation Communities and Cover Type	Total Area w/in BSA (Acres)	Project Impacts			
		Permanent Impacts	Temporary Impacts	Total Direct Impacts	Indirect Impacts
Riparian and Wetlands					
Southern Cottonwood Willow Riparian Forest	311.92	18.33	14.32	**32.65**	62.84
Southern Coast Live Oak Riparian Forest	12.55	3.09	0.00	**3.09**	6.57
Southern Willow Scrub	4.23	0.13	0.00	**0.13**	1.25
Mulefat Scrub	1.51	1.11	0.007	**1.12**	0.00
Arundo/Disturbed Wetland	19.08	0.003	1.54	**1.54**	4.9
Coastal and Valley Freshwater Marsh	0.26	0.00	0.00	**0.00**	0.07
Subtotal:	**330.47**	**22.66**	**15.87**	**38.53**	**75.63**
Open Water					
Open Water (not a vegetation type)	14.53	0.42	0.45	**0.87**	0.00
Subtotal	**14.53**	**.042**	**0.45**	**0.87**	**0.00**
Uplands					
Non-Native Grassland	168.06	43.17 (30.72 toad habitat 12.45 other)	10.66	**53.83**	41.60
Diegan Coastal Sage Scrub	117.98	24.36	4.09	**28.45**	32.23
Disturbed Diegan Coastal Sage Scrub	36.6	13.28	3.77	**17.05**	16.59
Coast Live Oak Woodland	3.07	0.72	.05	**0.27**	0.67
Subtotal:	**325.71**	**81.53**	**18.57**	**100.1**	**91.09**
Other Vegetation Types					
Urban/Developed	324.55	46.28	9.93	**56.21**	0.00
General Agriculture	296.94	38.81	3.65	**42.46**	23.65
Disturbed Habitat	182.00	9.10	1.26	**10.36**	0.00
Non-Native Vegetation	10.94	3.45	.41	**3.86**	0.00
Eucalyptus Woodland	9.74	2.89	.31	**3.20**	0.00
Subtotal:	**824.17**	**100.53**	**15.56**	**116.09**	**23.65**
Total:	**1,499.43**	**204.64**	**50.45**	**255.09**	**190.37**

Table 2. Impacts to Listed Species

Species	Permanent Impacts	Temporary Impacts	Indirect Impacts
	Number Impacted	Number Impacted	Number Impacted*
coastal California gnatcatcher	3 pairs	0	3 pairs
least Bell's vireo	4 pairs, 5 singles	7 pairs, 6 singles	12 pairs, 12 singles
southwestern willow flycatcher	0	0	1 migrant
arroyo toad	3 populations	1 population	0

*Includes permanent and direct impacts

2.5 Project Location

The proposed project is located along the existing SR-76 within the lower reach of the San Luis Rey River valley and its associated floodplain. This stretch of the San Luis Rey River is perennial, receiving input from the upstream watershed. Nearby drainages include Little Gopher Canyon, Bonsall Creek, Moosa Creek, and Ostrich Farms Creek. Areas within the San Luis Rey River floodplain have been developed with agriculture, transportation, recreation (golf course), commercial, and residential uses.

The project action area is defined as the area 400 feet from the centerline of the proposed alignment, starting 0.5 mile west of Melrose Drive to Ramona Drive on the east. The action area additionally includes the entire San Luis Rey River floodplain between Ramona Drive and to a point downstream where effects are not experience (potentially to the Pacific Ocean) and extends up each of the following creeks/canyons to there terminus; Little Gopher Canyon, Bonsall Creek, Moosa Creek, and Ostrich Farms Creek. The action also includes those mitigation lands associated with the project (e.g., Groves).

2.6 Conservation Measures

The proposed action includes the following conservation measures that will be implemented as part of the proposed project in order to avoid or otherwise minimize potential adverse effects of the action on listed species.

2.6.1 General

1. Caltrans would designate Service-approved biologists who would be responsible for overseeing monitoring and compliance with protective measures for the biological resources. The biologists will be familiar with the life history and ecology of the flora and fauna present within the San Luis Rey River watershed, including the arroyo toad, gnatcatcher, vireo, flycatcher, and ambrosia. The biologists will be familiar with field techniques, to include handling of species, as well as construction techniques relative to the project types proposed. A section 10(a)(1)(A) permit could be necessary for the handling of federally-listed species. The biologists would maintain communications with the appropriate personnel (project manager, resident engineer) to ensure that issues relating to biological resources are appropriately and lawfully managed. The biologists would also be present to ensure compliance with all conservation measures. The monitoring biologists will submit reports that document compliance with these measures to the Service upon request or, at a minimum,

included in the end of the year report. In addition, the biologists will perform the following duties.

a. Be on site during all vegetation clearing/grubbing and weekly during project construction in upland/riparian habitat to be impacted.

b. Inspect the fencing and erosion control measures of all project areas (including preservation/restoration/creation sites) a minimum of once per week. Particular attention should be made immediately before and after rain events to ensure that any breaks in the fence or erosion control measures are repaired.

c. Train and educate all contractors and construction personnel about the biological resources associated with this project and ensure that training is implemented by construction personnel. At a minimum, training would include: 1) the purpose for resource protection; 2) a description of the sensitive species and their habitats; 3) the conservation measures in the biological opinion that should be implemented during project construction, including strictly limiting activities, vehicles, equipment, and construction materials to the fenced project footprint to avoid impacts to sensitive resource areas in the field (i.e., avoided areas delineated on maps or on the project site by fencing); 4) environmentally responsible construction practices; 5) the protocol to resolve conflicts that may arise at any time during the construction process; 6) the general provisions of the Act, the need to adhere to the provisions of the Act, and the penalties associated with violating the Act.

d. Ensure that any measures developed in coordination with the Service to avoid all impacts to all encountered sensitive species as well as other nesting birds are implemented.

e. Immediately notify the Resident Engineer to halt work, if necessary, and confer with the Service to ensure the proper implementation of species and habitat protection measures. The biologist would report any breech of the conservation measures within this opinion to the Service within 24 hours of its occurrence.

f. Provide monthly reports and the final report. The reports would include: a summary of compliance with conservation measures, reasonable and prudent measures, and term and conditions; a summary or accounting of the acreages and applicable habitat types impacted; photographs; and other relevant summary information documenting that authorized impacts were not exceeded and that general compliance with all conditions of this biological opinion was achieved.

2. Storage and staging areas will be placed as far from sensitive habitat, as possible, and kept free from trash and other waste. Staging areas for construction work will be located within permanent impact areas or previously disturbed sites within the project footprint and not adjacent to or within sensitive habitat.

3. The changing of oil, refueling, and other actions that could result in a release of a hazardous substance shall be restricted to designated areas that are a minimum of 100-feet from any sensitive plant populations, sensitive habitats, or drainages. Such designated areas will be surrounded with berms, sandbags, or other barriers to further prevent the accidental spill of fuel, oil, or chemicals.

4. Construction dust impacts will be offset through implementation of Caltrans Standard Specifications, including Section 7-1.01F Air Pollution Control, Section 10 Dust Control, Section 17 Watering, and Section 18 Dust Palliative. The project biologist will also periodically monitor the work area to ensure that construction-related activities do not generate excessive amounts of dust or cause other disturbances. Erosion control measures will be regularly checked by Caltrans inspectors, the biologist, or the resident engineer.

5. During any nighttime construction, all project lighting (e.g., staging areas, equipment storage sites, roadway) will be directed onto the roadway or construction site and away from sensitive habitat. Light glare shields may also be used to reduce the extent of illumination into adjoining areas.

6. Permanent lighting will be installed at intersections. If lighting is adjacent to sensitive habitat it will be directed or shielded away from the habitat. No permanent lights will be installed within sensitive habitat.

7. Best Management Practices to address erosion and excess sedimentation will be incorporated into the project plans. Measures that will be implemented during construction include silt fencing, gravel bags, hay bales, fiber rolls, and protection/velocity dissipation at drainage outlet points. Vegetation filters, such as swales or biostrips may also be used to remove sediment and other contaminants from runoff prior to off-site flow. Measures that will be implemented after construction include plantings, retaining walls and slope stabilization techniques.

   Erosion control blankets having plastic mesh with the potential to ensnare amphibians and reptiles will not be used in areas where these animals inhabit.

8. Best Management Practices employed during construction will follow the applicable Department guidelines and be detailed in the project's Storm Water Management Plan, Storm Water Pollution Prevention Plan, and Water Pollution Control Program.

9. Dewatering may be required for some aspects of construction involving in-stream work. Dewatering would not be conducted within wetlands. In specific cases where it is deemed necessary to work in a flowing stream/creek, the work area may be isolated and the flowing water would be temporarily diverted around the work site to maintain downstream flows during construction. Proposed crossings and/or diversion structures would be the minimum necessary to complete the task. Any temporary dam or other artificial obstruction constructed would only be built from materials such as sandbags or clean gravel that would result little or no siltation. When construction is completed, the flow diversion structure

should be removed as soon as possible in a manner that would allow flow to resume and prevent debris or sediment accumulated from returning to the stream. If dewatering is conducted, either a pump would move water to an upland disposal site, or a sediment basin or other structure would be used to collect and treat the water. If applicable, a National Pollutant Discharge Elimination System permit could be required. If not applicable, the water returned to the waterway should be equivalent in basic parameters (e.g. turbidity, total suspended solids) as that in the waterway during current conditions.

2.6.2 Flora

10. Impacts to ambrosia associated with the construction of SR-76 will be avoided. Ambrosia will only be impacted during translocation efforts intended to benefit the species. Otherwise, ESA fencing will be constructed, prior to project impacts, around the proximal populations of ambrosia at the Jeffries Ranch, Marron, and Groves' properties. There will be a minimum 20 foot buffer between the extent of the known ambrosia population and the Environmental Sensitive Area (ESA) fencing.

11. Ambrosia translocation and long term management plans will be approved by the Service. The translocation plan will be incorporated into the Morrison property restoration plan and the long term management incorporated into the property's habitat management plan. Translocation will be implemented by a biologist with a history of translocating sensitive plant species. The exact location where the ambrosia propagules will be transplanted will be determined in the field by the Caltrans biologist in coordination with the Service prior to transplantation.

    The translocated ambrosia population will be monitored for a minimum five (5) years to document success or failure of the translocation efforts. Success will be achieved when at least 25 percent (%) of the translocated ambrosia expand from the transplanted blocks as clones and/or newly established individuals.

2.6.3 Fauna

12. All vegetation within the construction limits will be cleared outside the breeding seasons (February 15 to September 15) to avoid impacts to the arroyo toad and migratory birds/raptors, including the gnatcatcher, vireo, and flycatcher. If clearing activities must occur during the breeding season, then pre-construction surveys will be conducted to ensure that no breeding or nesting birds are present within or immediately adjacent to the proposed clearing area. Should an active nest be located, then the Service will be contacted and discussions will commence to determine how to proceed. All possible arroyo toads will be cleared from the impact area(s) prior to project impacts (clearing, grubbing, and grading).

13. Sensitive habitat outside the alignment footprint will be designated an ESA and depicted as such on project maps and plans. No personnel or equipment will be allowed within these areas at any time. Prior to and during construction, barriers will be established in key areas

to deter public entry into the site. Additionally, temporary fencing will be provided to restrict access to sensitive habitat adjoining the work limits.

14. Pile driving associated with construction of the San Luis Rey River Bridge shall only be conducted between September 16 and February 14 to reduce noise affects to nesting/breeding birds within the project vicinity including, the gnatcatcher, vireo and flycatcher.

15. The San Luis Rey River Bridge will have design features that will provide bats with potential sites for day/night roosting.

2.6.4 Arroyo Toad

16. Caltrans would develop an arroyo toad translocation monitoring program to be implemented during all construction activities that have the potential to adversely affect the arroyo toad. This program would be coordinated with the Service and finalized prior to initiation of construction activities. The program would include the following requirements set forth in the species' conservation measures below.

17. Prior to clearing, grubbing, and construction activities, Service-approved biologists will monitor arroyo toad breeding activity in those project areas containing or adjacent to breeding habitat. The biologists will determine when egg clutches or larvae are no longer present in the waterway (generally late May at lower elevation, June at higher elevation). When sign of breeding is no longer evident, an exclusionary fence will be installed and clearance surveys initiated.

18. Prior to clearing, grubbing, and grading activities, arroyo toad temporary exclusionary fence will be constructed along the perimeter of the project footprint within or immediately adjacent to arroyo toad habitat (breeding and aestivation). The intent of the fence is to fully contain the area(s) to be impacted and to remove and exclude arroyo toads. Exclusionary fence in aestivation habitat will not be installed prior to May 1. The Service-approved biologist will be present during the exclusionary fence installation, reconfigurations, breach repairs, and weekly during the breeding season.

    The fence will consist of fabric or plastic at least 2 ft high, staked firmly to the ground with the lower 1 ft of material stretching outward along the ground and secured with a continuous line of gravel bags. No digging or vegetation removal will be associated with the installation of the fence and all materials shall be removed when the Project is complete. The removal of some vegetation, without disturbing the soil, within the project footprint to aid in the observance and collection of arroyo toads is acceptable.

19. Prior to clearing, grubbing, and grading activities, Service-approved biologists will perform a minimum of three nighttime surveys inside the exclusionary fence and remove all arroyo toads found within its perimeter. The approved biologist will continue until there have been two consecutive nights without arroyo toads inside the fencing. Any breach in the

exclusionary fence during times when arroyo toads area active above ground, will result in repeating the 3-day minimum clearance surveys for that particular area.

20. If conditions do not occur that result in sufficient arroyo toad emergence and movement, a Service-approved biologist will attempt to elicit a response from the arroyo toads during nights late in the known breeding season, with temperatures above 50^{o}F, by spraying the area inside the exclusionary fence with water to a depth of approximately one to two inches to simulate a rain event.

21. Whether or not a simulated precipitation event is done, arroyo toads found within the Project footprint will be captured and translocated by Service-approved biologists to the closest area of suitable habitat. The Service-approved biologist will coordinate with the appropriate property owner(s) and the Service on where the arroyo toads will be placed.

22. Service-approved biologists will maintain a complete record of all arroyo toads encountered and moved from harms way during translocation efforts. The date and time of capture, sex, physical dimensions, and coordinates/specific location of capture will be recorded and provided to the Service, within 30 days of the completion of translocation.

    In addition to reporting on the translocation effort, monthly reports (including photographs of impact areas) will be submitted to the Service during construction activities within areas demarcated by arroyo toad exclusion fencing. The monthly reports will document general compliance with all applicable conditions and report all incidents not in compliance with this biological opinion. The reports will also outline the duration of arroyo toad monitoring, the location of construction activities, the type of construction that occurred, and equipment used. These reports would specify numbers, locations, sex, observed behavior, and remedial measures employed to avoid, minimize, and mitigate impacts to arroyo toads. All field notes and other documentation generated by the Service-approved biologist shall be made available upon request to the Service.

23. To avoid transferring disease or pathogens between aquatic habitats during surveys and handling of arroyo toads, the approved biologists will follow the *Declining Amphibian Population Task Force's Code of Practice* (DAPTF, 1991) or newer version when available.

24. The use of pitfall traps, to increase capture of arroyo toads, is acceptable. All pitfall traps will be covered or removed when clearance surveys are not occurring. Evidence of predation in the traps is grounds for removing them.

2.6.5 Fencing

25. Directional (wildlife) fencing and a wildlife undercrossing placed at the south side of the San Luis Rey River near the Oceanside/Bonsall boundary will be constructed to enhance connectivity for wildlife species and limit incidences of roadkill. West of East Vista Way, the wildlife fencing will consist of an 8-ft tall chain link fence buried 1 foot underground, to prevent animals from digging under the barrier. East of East Vista Way, the wildlife fencing will have attached permanent 0.25 inch hardware cloth arroyo toad fencing that will be buried 1 ft underground and extend 2 ft above ground (Figure 11).

26. Wildlife and arroyo toad fencing will be inspected on a yearly basis between January 1 and March 15. All repairs necessary to maintain the integrity of the arroyo toad fencing, noted during the inspection, will occur prior March 15. Breaches in the arroyo toad fence which occur during the breeding season (March 15 to July 1) will be repaired within 1 week of the observed breach. Breaches in the arroyo toad fence, outside of the breading season, will be repaired prior to the next breeding season.

    Breaches in the wildlife fencing will be repaired within 1 week if the breach occurs during the breeding season in arroyo toad habitat and repaired by the beginning of the next breeding season if the breach occurs outside of the breeding season or outside of arroyo toad habitat.

2.6.6 Creation, Restoration, Enhancement, and Preservation

27. Areas temporarily impacted by construction will be restored in-kind, to the maximum extent practicable, using appropriate native species at a 1:1 ratio, except when the area is adjacent to landscaped areas or developed areas where using native species would provide little or no biological value (e.g. small isolated patch surrounded by development). A restoration/landscape plan with success criteria and remedial measures will be reviewed and approved by a qualified biologist and the Service prior to application in the field.

    Sections of existing SR-76 proposed for decommissioning would be restored using the same practices and plans as those areas temporarily impacted by the project.

28. Species identified on the California Invasive Plant Council's *List of Exotic Pest Plants of Greatest Ecological Concern in California* (http://www.cal-ipc.org) will not be incorporated into the planting scheme. A biologist shall review the seed/plant palette for the planning area, as well as other sites along the alignment, before application in the field.

29. All plants used in the landscaping and mitigation areas will comply with Federal, State, and County laws requiring inspection for infestations. The vendor will provide certification of inspection from the County of San Diego Agriculture. The Project Landscape Inspector will also inspect the plants before accepting delivery.

30. Offsetting measures for permanent impacts include enhancement, restoration, and/or creation of habitat. A plan outlining the details and implementation schedule of all enhancement, restoration, and creation will be prepared. The plan will be submitted to the Service for review and approval within 90 days of issuance of this biological opinion. All enhancement, restoration, and creation activities to offset permanent vegetation impacts should commence the first late-summer/fall/winter season prior to or concurrently with the start of work. The latest any offsetting enhancement, restoration, or creation activities could occur would be the first late-summer/fall/winter immediately after project activities have been initiated. The plan will include the following.

    a. A 5-year maintenance and monitoring program that would be implemented for the created, enhanced, and/or restored habitats.

    b. If established performance criteria are not met, the proponent would prepare an analysis of the cause(s) of failure and, if deemed necessary by the Service, propose remedial actions. If any of the enhanced/restored/created habitats have not met a performance criterion during the initial 5-year period, the work proponent's maintenance and monitoring obligations would continue until the Service deems the enhancement/restoration successful or contingency measures will be implemented.

    c. Reports which assess both the attainment of yearly success criteria and progress toward the final success criteria would be included in the yearly project reporting document.

31. The following measures will be implemented at all off-site enhancement, restoration, and creation sites to avoid and minimize effects to listed species and migratory birds during the five-year restoration period (if applicable).

    a. Any construction related activities will avoid the breeding/mating season (February 15-September 15).

    b. If maintenance and monitoring activities are conducted between February 15th and September 15th, a qualified biologist would conduct a habitat assessment and any necessary subsequent protocol surveys to determine the presence or absence of listed species and migratory birds prior to the start of proposed activities.

        i. If nesting birds are on-site, no maintenance activities will be conducted within 150 feet of a nest (exclusion zone), except to repair broken irrigation lines or otherwise approved by the Service. If an irrigation line is broken and workers need to encroach into the 150-foot exclusion zone, then the project proponent and the Service will be notified immediately. Prior to maintenance workers accessing the 150-foot exclusion zone, the project proponent and the Service will determine the most appropriate timing and method of repair without causing harm to the nest and/or the nesting pair. Morrison is a restoration site; there will be no grading or construction. Using some hand held tools and machinery, such as for auger planting, should be permitted to 150 feet.

ii. If listed species are on-site, the Service should be contacted prior to any activities to determine the benefit of continuing the maintenance and monitoring activities during the breeding/mating season.

c. An education program will be implemented by the project proponent to ensure that all enhancement, restoration, and creation site maintenance workers understand the work restrictions and are aware of the above described conservation measures.

32. Restoration will occur as early as possible following final grading and be accompanied with periodic monitoring, success criteria, and maintenance to ensure adequate coverage and to prevent erosion into adjacent biologically sensitive areas.

33. The applicant will ensure that all irrigation is temporary and for the shortest duration possible. No permanent irrigation will be used for landscape or habitat creation/restoration/enhancement.

34. Bullfrogs and other exotic species that prey upon or displace arroyo toads will be excluded, destroyed, or otherwise permanently removed from the site if encountered.

35. Within 90 days of issuance of the Biological Opinion, Caltrans will provide a draft preservation mechanism (i.e., deed restriction, conservation easement, etc.) that will protect all mitigation areas in perpetuity and a draft Habitat Management Plan for the areas preserved. The draft Habitat Management Plan will be reviewed and approved by the Service prior to plan finalization.

36. Permanent direct and indirect impacts to arroyo toad, gnatcatcher, vireo, and flycatcher would be mitigated by one of two options (A or B). The options are provided in Tables 3-8 below.

Table 3. Option A: Compensation Sites

Vegetation Type	Groves (acres)	Morrison (acres)*	Singh (acres)	Zweirstra (acres)	Pilgrim Creek (acres)
Coastal sage scrub	180	0	13.6 upland creation	7 upland creation	0
Coast live oak woodland	11	0			0
Non-native grassland	50	0			0
Riparian forest/riparian scrub	0	148.28 RS/RF restoration	37.9 RS/RF creation; 5.5 FWM/RS restoration	3.4 RS/RF creation; 3.3 RS/RF restoration	4.94 riparian credits

RS – riparian scrub RF – riparian forest FWM – freshwater marsh

*The Morrison site totals 148.28 acres, including the 136.54 acre Morrison parcel and 11.74 acres of Caltrans right-of-way located between the Morrison parcel and the proposed alignment.

Table 4. Option A: Mitigation for Permanent Impacts

Habitat Type	Permanent Impacts (ac)	Mitigation Ratio	Total Compensation (ac)	Mitigation Location (ac)	Available Acres Remaining
Riparian and Wetlands					
Mulefat Scrub	1.11	3:1	3.33	1:1 creation at Singh= 37.9 - 1.11ac 2:1 restoration at Morrison =148.28 - 2.22ac	Singh = 36.79 creation RS/RF; 5.5 restoration- FWM/RS; Morrison = 146.06 RS/ RF; Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Cr = 4.94
Southern Willow Scrub	0.13	3:1	0.39	1:1 creation at Singh =36.79 - 0.13 ac 2:1 restoration at Morrison = 146.06 - 0.26 ac	Singh = 36.66 creation RS/RF; 5.5 restoration FWM/RS; Morrison = 145.80 RS/ RF, Zwierstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Cr = 4.94
Disturbed Wetland	0.003	3:1	0.009	1:1 creation at Singh = 36.66 - 0.003 ac 2:1 restoration at Morrison = 145.8 - 0.006	Singh = 36.66 creation RS/RF; 5.5 FWM/RS restoration; Morrison = 145.79 RS/RF, Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Cr = 4.94
Southern Cottonwood Willow Riparian Forest (For USACE jurisdictional impacts)	4.94	1:1	4.94	1:1 creation at Pilgrim 4.94 – 4.94	Singh = 36.66 creation RS/RF; 5.5 FWM/RS restoration; Morrison= 145.79 RS/RF, Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Cr = 0
Southern Cottonwood Willow Riparian Forest	18.33	3:1	54.99	1:1 creation at Singh = 36.66 - 18.33; 2:1 restoration at Morrison = 145.79 – 36.66	Singh = 18.33 creation RS/RF; 5.5 FWM/RS restoration; Morrison = 109.13 RS/RF; Zwierstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Cr =0.
Southern Coast Live Oak Riparian Forest	3.09	3:1	9.27	1:1 creation at Singh 18.33 – 3.09; 2:1 restoration at Morrison 109.13 - 3.36	Singh = 15.24 creation RS/RF; 5.5 FWM/RS restoration; Morrison = 105.77 RF/RS, Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration; Pilgrim Cr = 0.
Uplands					
Coastal Sage Scrub	24.36	2:1	48.72	Groves preservation 180 – 48.72	Groves = 131.28 CSS
Disturbed Coastal Sage Scrub	13.28	2:1	26.56	Groves preservation 131.28 – 26.56	Groves = 104.72 CSS
Coast Live Oak Woodland	0.72	3:1	2.16	Groves preservation 11.0 – 2.16	Groves = 8.84 CLOW
Non-native Grassland	43.17 total 30.72 toad habitat; 12.45 other	1:1 toad habitat; 0.5:1 other	36.95	Groves preservation 50.0 – 36.95	Groves = 13.06 NNG

RS – riparian scrub RF – riparian forest FWM – freshwater marsh CLOW – coast live oak woodland
CSS – coastal sage scrub NNG – non-native grassland

Table 5. Option A: Mitigation for Indirect Impacts

Habitat Type	Indirect Impacts (ac)	Mitigation Ratio	Total Compensation (ac)	Mitigation Location (ac)	Available Acres Remaining After Mitigation
Riparian and wetlands					
Southern willow scrub	1.25	1:1	1.25	Morrison 105.77 – 1.25	Morrison = 104,52 RS/RF Singh = 15.24 creation RS/RF; 5.5 FWM/RS restoration Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration Pilgrim Cr = 4.94.
Disturbed Wetland	4.9	0.5:1	2.45	Morrison 104.52 – 2.45	Morrison = 102.07 RS/RF Singh = 15.24 creation RS/RF; 5.5 FWM/RS restoration Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration Pilgrim Cr = 4.94
Southern cottonwood willow riparian forest	62.84	1:1	62.84	Morrison 102.07 – 62.84	Morrison = 39.23 RS/RF Singh = 15.24 creation RS/RF; 5.5 FWM/RS restoration Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration Pilgrim Cr = 4.94
South coast live oak riparian	6.57	1:1	6.57	Morrison 39.23 – 6.57	Morrison = 32.66 RS/RF Singh = 15.24 creation RS/RF; 5.5 FWM/RS restoration Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration Pilgrim Cr = 4.94
Coastal and Valley Freshwater Marsh	0.07	1:1	0.07	Morrison 32.66 – 0.07	Morrison = 32.59 RS/RF Singh = 15.24 creation RS/RF; 5.5 FWM/RS restoration Zweirstra = 3.4 RS/RF creation, 3.3 RS/RF restoration Pilgrim Cr = 4.94
Uplands					
Coastal sage scrub	32.23	1:1	32.23	Groves preservation 104.72 – 32.23	Groves = 72.49 CSS preservation Singh = 13.6 upland creation Zweirstra = 7.0 upland creation
Disturbed coastal sage scrub	16.59	1:1	16.59	Groves preservation 72.49 – 16.59	Groves = 55.9 CSS preservation Singh = 13.6 upland creation Zweirstra = 7.0 upland creation
Coast live oak woodland	0.67	1:1	0.67	Groves preservation 8.84 – 0.67	Groves = 8.17 CLOW preservation Singh = 13.6 upland creation Zweirstra = 7.0 upland creation

RS – riparian scrub RF – riparian forest FWM – freshwater marsh CLOW – coast live oak woodland
CSS – coastal sage scrub

*Long term temporary impacts to healthy southern cottonwood willow riparian forest (14.32 acres) will be mitigated at 1.5:1. Mitigation will occur onsite at 1:1; and offsite at 0.5:1 (7.16 acres). Offsite mitigation will occur at the Morrison site, leaving 25.43 acres available.

Table 6. Option B: Compensation Sites

Vegetation Type	Groves (acres)	Morrison* (acres)	Zweirstra (acres)	Pilgrim Creek (acres)
Coastal Sage Scrub	180	0	7 upland creation	0
South Coast Live Oak Woodland	11	0		0
Non-native Grassland	50	0		0
Riparian forest/riparian scrub	0	148.28 restore RS/RF (2.8 is FWM)	3.4 RS/RF creation; 3.3 RS/RF restoration	4.94 riparian credits

RS = riparian scrub RF = Riparian forest FWM – freshwater marsh

*The Morrison site totals 148.28 acres; it includes the 136.54 acre Morrison parcel, plus 11.74 acres of Caltrans right-of-way located between the Morrison parcel and the proposed alignment.

Table 7. Option B: Mitigation for Permanent Impacts

Habitat Type	Permanent Impacts (ac)	Mitigation Ratio	Total Compensation (ac)	Mitigation Location	Available Acres Remaining After Mitigation
Riparian and Wetlands					
Mulefat Scrub	1.11	5:1	5.55	5:1 restoration at Morrison= 148.28 - 5.55	Morrison*= 142.73 RS/RF Zweirstra = 3.4 RS/RF creation; 3.3 RS/RF restoration Pilgrim = 4.94 riparian credits
Southern Willow Scrub	0.13	5:1	0.65	5:1 restoration at Morrison = 142.73 - 0.65 ac	Morrison = 142.08 RF/RS restoration acres Zweirstra = 3.4 RS/RF creation; 3.3 RS/RF restoration Pilgrim = 4.94 riparian credits
Disturbed Wetland	0.003	1:1	0.003	1:1 restoration at Morrison = 142.08 - 0.003 ac	Morrison = 142.07 RF/RS restoration acres Zweirstra = 3.4 RS/RF creation; 3.3 RS/RF restoration Pilgrim = 4.94 riparian credits
Southern Cottonwood Willow Riparian Forest (for USACE jurisdictional impacts)	4.94	1:1	4.94	1:1 creation at Pilgrim = 4.94 – 4.94	Morrison = 142.07 RF/RS restoration acres Zweirstra = 3.4 RS/RF creation; 3.3 RS/RF restoration Pilgrim = 0 riparian credits
Southern Cottonwood Willow Riparian Forest	3.4	3:1	10.2	1:1 creation at Zweirstra = 3.4 – 3.4 2:1 restoration at Zweirstra=3.3 – 3.3 2:1 restoration at Morrison = 142.07 – 3.5	Morrison = 138.58 RS/RF restoration acres Zweirstra = 0 RS/RF creation; 0 RS/RF restoration Pilgrim = 0 riparian credits
Southern Cottonwood Willow Riparian Forest	9.99	5:1	49.95	5:1 restoration at Morrison = 138.58 – 49.95	Morrison = 88.63 RF/RS restoration acres Zweirstra = 0 RS/RF creation; 0 RS/RF restoration. Pilgrim = 0 riparian credits
Southern Coast Live Oak Riparian Forest	3.09	5:1	15.45	5:1 restoration at Morrison = 88.63 – 15.45	Morrison = 73.18 RF/RS restoration acres Zweirstra = 0 RS/RF creation; 0 RS/RF restoration Pilgrim = 0 riparian credits
Uplands					
Coastal Sage Scrub	24.36	2:1	48.72	Groves preservation CSS = 180 – 48.72	Groves = 131.28 CSS preservation; Zweirstra 7.0 upland creation
Disturbed Coastal Sage Scrub	13.28	2:1	26.56	Groves preservation CSS = 131.28 – 26.56	Groves = 104.72 CSS preservation; Zweirstra 7.0 upland creation
Coast live oak woodland	0.72	3:1	2.16	Groves preservation CLOW = 11 – 0.66	Groves = 10.34 CLOW preservation; Zweirstra 7.0 upland creation
Non-native grassland	43.17 total = 30.72 toad habitat; 12.45 other	1:1 toad habitat; 0.5:1 other	1:1 = 30.72; 0.5:1 = 6.23	Groves preservation NNG = 50 – 36.95	Groves = 13.05 NNG preservation; Zweirstra 7.0 upland creation

RS – riparian scrub RF – riparian forest FWM – freshwater marsh CLOW – coast live oak woodland
CSS – coastal sage scrub NNG – non-native grassland

Table 8. Option B: Mitigation for Indirect Impacts

Habitat Type	Indirect Impacts (ac)	Mitigation Ratio	Total Compensation (ac)	Mitigation Location (ac)	Available acres remaining after mitigation
Riparian and Wetlands					
Southern willow scrub	1.25	1:1	1.25	Morrison 73.18 -1.25	Morrison = 71.93 RS/RF Zweirstra = 0 acres creation/restoration; 0 acres restoration Pilgrim = 0 riparian credits
Disturbed Wetland	4.9	0.5:1	2.45	Morrison 71.93 – 2.45	Morrison 69.48 RS/RF Zweirstra 0 acres creation/restoration; 0 acres restoration Pilgrim = 0 riparian credits
Southern cottonwood willow riparian forest	62.84	1:1	62.84	Morrison 69.48 – 62.84	Morrison = 6.64 RS/RF Zweirstra = 0 acres creation/restoration; 0 acres restoration Pilgrim = 0 riparian credits
South coast live oak riparian	6.57	1:1	6.57	Morrison 6.64 – 6.57	Morrison = 0.07 RS/RF Zweirstra = 0 acres creation/restoration; 0 acres restoration
Coastal and Valley Freshwater Marsh	0.07	1:1	0.07	Morrison 0.07 – 0.07	Morrison = 0 acres RS/RF restoration Zweirstra = 0 acres creation/restoration; 0 acres restoration Pilgrim = 0 riparian credits
Uplands					
Coastal sage scrub	32.23	1:1	32.23	Groves preservation 104.72 – 32.23	Groves = 72.49 CSS preservation Zweirstra = 7.0 upland creation
Disturbed coastal sage scrub	16.59	1:1	16.59	Groves preservation 72.49 – 16.59	Groves = 55.9 CSS preservation Zweirstra = 7.0 upland creation
Coast live oak woodland	0.67	1:1	0.67	Groves preservation 10.34 – 0.67	Groves = 9.67 CLOW preservation Zweirstra = 7.0 upland creation

RS – riparian scrub RF – riparian forest FWM – freshwater marsh CLOW – coast live oak woodland
CSS – coastal sage scrub

*Long term temporary impacts to healthy southern cottonwood willow riparian forest (14.32 acres) will be mitigated at 1.5:1. Mitigation will occur onsite at 1:1; and offsite at 0.5:1 (7.16 acres). These impacts will be mitigated at the Groves site, with preservation of coast live oak woodland. The Groves remainder will be 2.51 acres of CLOW, 55.9 acres CSS, and 13.05 NNG.

2.6.7 Reporting

The Caltrans biologist will submit monthly reports during initial grading and clearing, and when construction occurs near sensitive biological resources; and provide a final report documenting compliance with all measures within 60 days of project completion.

3. STATUS OF THE SPECIES

3.1 *Bufo californicus* (Arroyo toad)

3.1.1 Listing Status

The Service listed the arroyo toad as endangered on December 16, 1994 (*Federal Register* 59: 3264) and a recovery plan was published in July 1999 (Service 1999a).

3.1.2 Critical Habitat

Critical habitat was designated for the arroyo toad on February 7, 2001 (66 FR 9414). On October 30, 2002, the U.S. District Court for the District of Columbia vacated the final critical habitat designation and remanded the rule to the Service. The court ordered the Service to prepare a new final designation and economic analysis on or before July 30, 2004. The Service re-proposed critical habitat for the arroyo toad on April 28, 2004, with corrections on May 17, 2004 (69 FR 23254 and 69 FR 27886, respectively). Final critical habitat was again designated on April 13, 2005 (70 FR 19562-19633). However, all proposed critical habitat in San Diego County was excluded from critical habitat designation under section 4(b)(2) of the Act for economic reasons.

3.1.3 Species Description

The arroyo toad is a small, dark-spotted arroyo toad of the family *Bufonidae*. The parotoid glands, located on the top of the head, are oval-shaped and widely separated. A light/pale area or stripe is usually present on these glands and on top of the eyes. The arroyo toad's underside is buff-colored and usually without spots (Stebbins 1985). Recently metamorphosed individuals will easily blend with the substrate and are usually found adjacent to water. At the time of listing, the arroyo toad was described as the arroyo southwestern toad (*Bufo microscaphus californicus*). Gergus *et al.* (1997) recently published genetic justification for the reclassification of the arroyo toad as a full species [i.e., arroyo toad (*Bufo californicus*)].

3.1.4 Distribution

The current distribution of the arroyo toad in the United States is from the Salinas River Basin in Monterey County, south to the Tijuana River and Cottonwood Creek Basin along the Mexican Border. Arroyo toads are also known from a seemingly disjunct population in the Arroyo San Simeon River System, about 10 miles (mi) southeast of San Quintín, Baja California (Gergus *et al.* 1997). Although the arroyo toad occurs principally along coastal drainages, it also has been recorded at several locations on the desert slopes of the Transverse range (Patten and Myers 1992, Jennings and Hayes 1994). The current elevational range for most arroyo toad populations in San Diego County is about 1,000 to 4,600 ft, although they were historically known to extend into the lower portions of most river basins (Service 1999a).

3.1.5 Habitat Affinities

Arroyo toads require shallow, slow-moving streams, and riparian habitats that have natural flooding regimes which maintain areas of open, sparsely vegetated, sandy stream channels and terraces (Service 2001). Stream order, elevation, and floodplain width are important factors in determining the size and long-term viability of a population of arroyo toads (Sweet 1992, Barto 1999, Griffin 1999). Streams with the greatest potential to support self-sustaining populations are typically of a high stream order (i.e., 3rd to 6th order), at low elevations (below 3,000 ft), with wide floodplains (Sweet 1992, Barto 1999, Griffin 1999). Optimal breeding habitat consists of low gradient stream reaches that have shallow pools with fine textured substrates (i.e., sand or gravel). Upland habitats used by arroyo toads during both the breeding and nonbreeding seasons include alluvial scrub, coastal sage scrub, chaparral, grassland, and oak woodland (Holland 1995, Griffin *et al.* 1999, Service 2001). Arroyo toads have also been found in agricultural fields (Griffin *et al.* 1999).

3.1.6 Life History

Arroyo toad larvae feed on loose organic material such as interstitial algae, bacteria, and diatoms. They do not forage on macroscopic vegetation (Sweet 1992, Jennings and Hayes 1994). Juvenile arroyo toads rely on ants almost exclusively (Service 1999a). By the time they reach 17 to 23 mm in length, they take more beetles, along with the ants (Sweet 1992, Service 1999a). Adult arroyo toads probably consume a wide variety of insects and arthropods including ants, beetles, spiders, larvae, caterpillars, and others.

Breeding typically occurs from February to July on streams with persistent water (Griffin *et al.* 1999). However, at higher elevations and in waters fed by high elevation tributaries, the breeding season may start later in the spring and continue through the summer months. Female arroyo toads must feed for a minimum of approximately two months to develop the fat reserves needed to produce a clutch of eggs (Sweet 1992). Eggs are deposited and larvae develop in shallow pools with minimal current and little or no emergent vegetation. The substrate in these pools is generally sand or fine gravel overlain with silt. Arroyo toad eggs hatch in 4 to 5 days and the larvae are essentially immobile for an additional 5 to 6 days (Sweet 1992). They then begin to disperse from the pool margin into the surrounding shallow water, where they spend an average of 10 weeks (Sweet 1992). After metamorphosis (June-early September), the juvenile arroyo toads remain on the bordering gravel bars until the pool no longer persists (usually from eight to twelve weeks depending on site and yearly conditions) (Sweet 1992). Most individuals become sexually mature by the following spring (Sweet 1992).

This species has been observed moving approximately 1 mi within a stream reach and 1.2 mi away from the stream, into native upland habitats (Holland 1995, Sweet 1992) or agricultural areas (Griffin *et al.* 1999). Movement distances may be regulated by topography and channel morphology. Griffin (1999) reported a female arroyo toad traveling more than 300 m (948 ft) perpendicular from a stream and Holland (1998) found arroyo toads 0.7 mi from a water course. Arroyo toads are critically dependent on upland terraces and the marginal zones between stream channels and upland terraces during the non-breeding season, especially during periods of inactivity, generally late fall and winter (Sweet 1992).

3.1.7 Population Trend

Arroyo toad population numbers and densities are not currently known because insufficient data is available on the species' normal population dynamics and on habitat characteristics that correlate with density. This species was historically found in at least 22 river basins in southern California from the upper Salinas River system in Monterey County to San Diego County and southward to the vicinity of San Quintín, Baja California, Mexico. They have been extirpated from an estimated 75 percent of their former range in the United States and they now occur primarily in small, isolated areas in the middle to upper reaches of streams.

3.1.8 Threats

Because arroyo toad habitats (i.e., broad, flat floodplains in southern California) are favored sites for flood control projects, agriculture, urbanization, and recreational facilities such as campgrounds and off-highway vehicle parks, many arroyo toad populations were reduced in size or extirpated due to extensive habitat loss from 1920 to 1980 (Service 1999a). The loss of habitat, coupled with habitat modifications due to the manipulation of water levels in many central and southern California streams and rivers, as well as predation from introduced aquatic species, caused arroyo toads to disappear from a large portion of their previously occupied habitat in California (Jennings and Hayes 1994). Sweet (1992, 1993) and Holland and Goodman (1998) reported that toads are sensitive to disturbance by artificial lights, particularly single males early in the breeding season. Holland and Goodman (1998) suggest that this may be because increase ambient lighting may affect the vulnerability of toads to predation. Currently, the major threats to arroyo toad populations are from stream alteration, exotic species, urban and rural development, mining, recreation, grazing, drought, wildfire, and large flood events.

The arroyo toad and its primary habitat (San Luis Rey River) is threatened by transportation projects like the widening of SR-76 and the cumulative increases to already present road effects; agricultural practices resulting in loss and degradation of habitat; habitat fragmentation caused by roads and development; exotic plant species (primarily *Arundo donax, Tamarix sp., Brassica nigra,* and unspecified grass species) and animal species (Argentine ants (*Linepithema humile*), bullfrogs, exotic fish species, crayfish, and opossums) and their resulting changes to native habitats and depredation, sand and gravel mining effects on the hydrological regimes of the San Luis Rey River; recreational activities (equestrian, golfing, recreational centers, trails); residential development and the direct result of loss to habitat along with the ever increasing indirect effects from the ambiguous operation of a home; commercial/industrial development; wastewater treatment point source discharge of water into the San Luis Rey and the newly recognized adverse effects of chemicals (i.e. growth hormones) currently not treated for; water supply projects (water extraction for bottling, Lake Henshaw dam, Escondido Diversion Canal); urban runoff[1]; flood control projects which have channelized the lower reach of the San Luis

[1] The lower 13 miles of the San Luis Rey River are on the USEPA's list of impaired waterbodies (a.k.a. 303(d) list) for chloride and total dissolved solids. Water quality monitoring in 2003 found water quality exceedances (i.e., outside of predefined acceptable ranges) in the following categories: pH, turbidity, ammonia, oil and grease, dissolved copper, diazinon, chlorpyrifos, total coliform, fecal coliform, and enterococcus (San Luis Rey Watershed

Rey River and the vegetation being removed to maintain functionality; human influenced shifts in fire return intervals; and illegal fills and activities resulting in an unqualitative and unquantifiable adverse impact.

Wildfire impacts on the species from fire related effects in 2003 and 2007 have not been quantified for this species. As most arroyo toads were aestivating when the fires occurred, the fast moving fire fronts would not have contributed much heat to the soil sub-surface. Field investigations during the 2007 fires by the Department of Interior, Burned Area Emergency Response (BAER) team supported this as vegetation in arroyo toad habitat was largely unburned or suffered low vegetation mortality (BAER 2007). Post-fire precipitation during the winter of 2007 and spring of 2008 did not result in any documented significant debris flows which could result in temporal adverse effects to breeding arroyo toads. The significant post-fire growth of exotic and nuisance plants species in arroyo toad habitat may have long-term adverse effects on arroyo toad and its habitat.

3.1.9 Rangewide Conservation Needs

Based on the threat analysis above, stabilizing and maintaining populations throughout the range of the arroyo toad is necessary for the recovery of the species.

1. Riparian and upland habitats used for breeding, foraging, and wintering should be restored and protected from recreational activities, livestock grazing, mining, and other agricultural and urban development.
2. Introduced plant and animal populations should be removed and eliminated from arroyo toad habitat.
3. Activities that negatively alter water flow and quality should be monitored and kept to a minimum.

In 1999, a recovery plan for the arroyo toad was prepared by the Service (Service 1999a). The plan describes a strategy for recovery, downlisting, and delisting and identifies five action needs. These needs include maintaining populations throughout the range of the arroyo toad in California, monitoring the status of the existing populations, identifying and securing additional suitable habitat, conducting research for management efforts, and developing and implementing an outreach program. The San Luis Rey River is part of the Southern Recovery Unit and must maintain at least 20 self-sustaining metapopulations or subpopulations as part of the recovery criteria.

3.2 *Polioptila californica californica* (Coastal California gnatcatcher)

3.2.1 Listing Status

The Service listed the gnatcatcher as threatened on March 30, 1993 (58 FR 16742). In conjunction with the listing decision, the Service issued a special rule, pursuant to section 4(d) of the Act, defining the conditions under which take of the gnatcatcher would not be a violation of section 9 (58 FR 65088-65096). This special rule recognized the State's Natural Community Conservation Planning (NCCP) program, and several local governments' ongoing multi-species conservation planning efforts (e.g., the Multiple Species Conservation Program [MSCP]) that intend to apply Act standards to activities affecting the gnatcatcher. An interim process was established whereby jurisdictions actively involved in NCCP planning would be allowed to develop up to five percent of the remaining coastal sage habitat for projects that were consistent with the NCCP conservation guidelines (California Department of Fish and Game and California Resources Agency 1993).

3.2.2 Critical Habitat

The Service designated critical habitat for the gnatcatcher on December 19, 2007, which became effective on January 18, 2008 (72 *Federal Register* 72010). Designated critical habitat for the gnatcatcher includes 197,303 acres of Federal, state, local, and private land in Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, and has been divided into 13 Critical Habitat Units (Service 2007). Approximately 76,370 acres (or 38.7 percent) of the total 197,303 acres of gnatcatcher critical habitat, and 5 of the 13 Critical Habitat Units occur within San Diego County (Service 2007).

PCEs (as outlined in the final rule) for gnatcatcher are those habitat components that are essential for the primary biological needs of providing space for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal and foraging. PCEs are provided in (1) dynamic and successional sage scrub habitats (i.e., Venturan, Diegan, and Riversidean coastal sage scrub, Riversidean alluvial fan scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties); and, (2) non-sage scrub habitats such as chaparral, grassland, riparian areas, in proximity to sage scrub habitats as described for PCE 1 above that provide space for dispersal, foraging, and nesting (72 *Federal Register* 72035).

A total of 13 critical habitat units are identified in both the final rule, although Unit 4 was exempted from the revised final designation under section 4(a)(3)(B) of the Act, and all lands in Unit 11 were removed. Several qualitative criteria were used in the selection of specific areas or units, including focusing on areas (1) throughout the geographical and elevational range of the species; (2) within various occupied plant communities, such as Venturan coastal sage scrub, Diegan coastal sage scrub, Riversidean sage scrub, maritime succulent scrub, Riversidean alluvial fan scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub; and, (3) in documented areas of large, contiguous blocks of occupied habitat, or in areas that link essential populations areas (i.e., linkage areas) (72 *Federal Register* 72036).

3.2.3 Species Description

The coastal California gnatcatcher is a small (length: 4.3 in; weight: six grams), long-tailed member of the old-world warbler and gnatcatcher family *Sylviidae* (American Ornithologists' Union 1998). The bird's plumage is dark blue-gray above and grayish-white below. The tail is mostly black above and below. The male has a distinctive black cap which is absent during the winter. Both sexes have a distinctive white eye-ring.

The coastal California gnatcatcher is one of three subspecies of the California gnatcatcher (*Polioptila californica*) (Atwood 1991). Prior to 1989, the California gnatcatcher was classified as a subspecies of the Black-tailed gnatcatcher (*Polioptila melanura*). Atwood (1980, 1988) concluded that the species was distinct from *P. melanura*, based on differences in ecology and behavior.

3.2.4 Distribution

The coastal California gnatcatcher occurs on coastal slopes in southern California, from southern Ventura southward through Palos Verdes Peninsula in Los Angeles County through Orange, Riverside, San Bernardino and San Diego Counties into Baja California to El Rosario, Mexico, at about 30 degrees north latitude (Atwood 1991). In 1990, Atwood reported that 99 percent of all gnatcatcher locality records occurred at or below an elevation of 984 ft. In 1992, Atwood and Bolsinger reported that, of 324 sites of recent occurrence, 272 (84 percent) were located below 820 feet in elevation, 315 (97 percent) were below 1,640 feet, and 324 (100 percent) were below 2,460 feet. Since that time, additional data collected at higher elevations shows that this species may occur as high as 3,000 feet and that more than 99 percent of the known gnatcatcher locations occurred below 2,500 feet (Service 2000).

3.2.5 Habitat Affinity

Gnatcatchers typically occur in or near coastal sage scrub habitat. Coastal sage scrub is patchily distributed throughout the range of the gnatcatcher, and the gnatcatcher is not uniformly distributed within the structurally and floristically variable coastal sage scrub vegetation community. Rather, the subspecies tends to occur most frequently within California sagebrush (*Artemisia californica*) -dominated stands on mesas, gently sloping areas, and along the lower slopes of the coast ranges (Atwood 1990). An analysis of the percent gap in shrub canopy supports the hypothesis that gnatcatchers prefer relatively open stands of coastal sage scrub (Weaver 1998). The gnatcatcher occurs in high frequency and density in scrub with an open or broken canopy while it is absent from scrub dominated by tall shrubs and occurs in low frequency and density in low scrub with a closed canopy (Weaver 1998). Territory size increases as vegetation density decreases and with distance from the coast, probably due to food resource availability.

Gnatcatchers also use chaparral, grassland, and riparian habitats where they occur adjacent to sage scrub (Campbell *et al.* 1998). The use of these habitats appears to be most frequent during late summer, autumn, and winter, with smaller numbers of birds using such areas during the breeding season. These non-sage scrub habitats are used for dispersal, but data on dispersal use are largely anecdotal (Campbell *et al.* 1998). Probable dispersing gnatcatchers have been

documented in vegetation dominated by such species as *Brassica* spp. (wild mustard), annual grasses, *Salsola tragus* (Russian thistle), *Baccharis salicifolia* (mule fat), *Salix* spp. (willow), and *Tamarix* spp. (salt cedar) (Campbell *et al.* 1998). Linkages of habitat along linear features such as highways and power-line corridors may be of significant value in linking populations of the gnatcatcher (Famolaro and Newman 1998). Although existing quantitative data may reveal relatively little about gnatcatcher use of these other habitats, these areas may be critical during certain times of year for dispersal or as foraging areas during drought conditions (Campbell *et al.* 1998). Breeding territories have also been documented in non-sage scrub habitat (Campbell *et al.* 1998). Campbell *et al.* (1998) discuss scenarios explaining why habitats other than coastal sage scrub are used by gnatcatchers, including food source availability, dispersal areas for juveniles, temperature extremes, fire avoidance, and lowered predation rate for fledglings.

3.2.6 Life History

The California gnatcatcher is primarily insectivorous, non-migratory, and exhibits strong site tenacity (Atwood 1990). Diet deduced from fecal samples resulted in leaf- and plant-hoppers and spiders predominating in the samples. True bugs, wasps, bees, and ants were only minor components of the diet (Burger *et al.* 1999). Gnatcatcher adults selected prey to feed their young that was larger than expected given the distribution of arthropods available in their environment. Both adults and young consumed more sessile than active prey items (Burger *et al.* 1999).

The California gnatcatcher becomes highly territorial by late February or early March each year, as males become more vocal during this time (Preston *et al.* 1998a). In southwestern San Diego County, the mean breeding season territory size ranged from 12 to 27 acres per pair and non-breeding season territory size ranged from 12 to 42 acres per pair (Preston *et al.* 1998b). During the non-breeding season, gnatcatchers have been observed to wander in adjacent territories and unoccupied habitat increasing their home range size to approximately 78 percent larger than their breeding territory (Preston *et al.* 1998b). The smallest documented home ranges occur near the coast and increase in more inland areas (Preston *et al.* 1998b).

The breeding season of the gnatcatcher extends from mid-February through the end of August, with the peak of nesting activity occurring from mid-March through mid-May (Grishaver *et al.* 1998). The gnatcatcher's nest is a small, cup-shaped basket usually found one to three feet above the ground in a small shrub or cactus. Clutch sizes range between three and five eggs, with the average being four. Juvenile birds associate with their parents for several weeks (sometimes months) after fledging (Atwood 1990). Nest building begins in mid-March with the earliest recorded egg date of March 20 (Grishaver *et al.* 1998). Post-breeding dispersal of fledglings occurs between late May and late November. Nest predation is the most common cause of nest failure (Braden *et al.* 1997, Sockman 1997, Grishaver *et al.* 1998). Gnatcatchers are persistent nest builders and often attempt multiple broods, which is suggestive of a high reproductive potential. However, typically this is offset by high rates of nest predation and brood parasitism (Atwood 1990, Braden *et al.* 1997). Nest site attendance by male gnatcatchers was determined to be equal to that of females for the first nest attempt and then declines to almost a third of female nest attendance for later nesting attempts due to the male tending to fledglings (Grishaver *et al.* 1998, Sockman 1998).

Gnatcatchers typically live for two to three years, although ages of up to five years have been recorded for some banded birds (Dudek and Associates 2000). Observations indicate that gnatcatchers are highly vulnerable to extreme cold, wet weather (Mock 1998). Nest predation tends to occur in greater proportion in the upper and lower third of the nest shrub. Predation is lower in nests with full clutch sizes (Sockman 1997). The species of nest shrub also influences predation risk (Grishaver *et al.* 1998). Potential nest predators are numerous, and include snakes, raccoons, and corvids (Grishaver *et al.* 1998). The California gnatcatcher also is known to be affected by nest parasitism of the brown-headed cowbird (*Molothrus ater*) (Braden *et al.* 1997). Nest parasitism has apparently resulted in earlier nesting dates of the gnatcatcher, which may partially compensate for the negative effect of parasitism (Patten and Campbell 1998). However, the gains in nest success from decreased nest parasitism appear to be negated by increased nest abandonment due to predation before cowbirds have migrated into an area (Braden *et al.* 1997).

The natal dispersal, for a non-migratory bird, such as the gnatcatcher, is an important aspect of the biology of the species (Mock 1993, Galvin 1998). The mean dispersal distance of gnatcatchers banded in San Diego County is reported at less than 1.9 miles; however, birds were also documented moving up to six miles from their natal territory (Bailey and Mock 1998). The longest documented dispersal distance by a juvenile is 10.1 miles (Braden 1992). Dispersal across highly man-modified landscapes, including major highways and residential development, is known to occur (Bailey and Mock 1998, Galvin 1998, Lovio 1996, Campbell and Haas 2003, Atwood *et al.* 1998). Extensive movement by breeding adults is relatively rare (Bailey and Mock 1998). Types of habitat used during dispersal are highly variable (Campbell *et al.* 1998). Although the mean dispersal distances that have been documented above are relatively low, dispersal of juveniles is difficult to observe and to document without extensive banding studies. Therefore, it is likely that the few current studies underestimate the gnatcatcher's typical dispersal capacity (Bailey and Mock 1998). Juvenile gnatcatchers are apparently able to traverse highly man-modified landscapes for at least short distances (Bailey and Mock 1998). Natural and restored coastal sage scrub habitat along highway corridors is used for foraging and nesting by gnatcatchers and may serve important dispersal functions (Famolaro and Newman 1998). Typically, however, the dispersal of juveniles requires a corridor of native vegetation, which provides foraging, and cover opportunities to link larger patches of appropriate sage scrub vegetation (Soulé 1991). These dispersal corridors facilitate the exchange of genetic material and provide a path for recolonization of areas from which the species has been extirpated (Soulé 1991, Galvin 1998).

3.2.7 Population Trend

The gnatcatcher was considered locally common in the mid-1940s, but by the 1960s, this subspecies had declined substantially in the United States owing to widespread destruction of its habitat (Atwood 1990). By 1980, Atwood (1980) estimated that no more than 1,000 to 1,500 pairs remained in the United States. In 1993, at the time the gnatcatcher was listed as threatened, the Service estimated that approximately 2,562 pairs of gnatcatchers occurred in the United States. Of these, 30 pairs occurred in Los Angeles County, 757 pairs occurred in Orange County, 261 pairs occurred in Riverside County, and 1,514 pairs occurred in San Diego County (Service 1993a). In October 1996, the total number of gnatcatchers in the United States was estimated at 2,899 pairs with two-thirds occurring in San Diego County (Service 1996), after subtracting out all gnatcatcher pairs authorized for take under Habitat Loss Permits, approved Natural Community Conservation Plans, Habitat Conservation Plans, and section 7 consultations. These population estimates were intended to represent a coarse approximation of the number of gnatcatchers in southern California. Confidence intervals have not been calculated for these estimates and, therefore, we cannot be sure of their precision.

Population estimates for gnatcatcher populations in the southern portion of the species' range (i.e., Mexico) are unknown. However, past surveys within northern Baja California, Mexico, have not identified gnatcatchers within approximately 15.5 miles south of the border, despite the presence of suitable habitat (Service 2003b). The closest individual gnatcatchers have been documented at inland localities 15.5 miles to 52.8 miles south of the border (Mellink and Rea 1994). Furthermore, Mellink and Rea (1994) found consistent morphological discontinuity between the Southern California and Mexico populations of gnatcatchers, suggesting that although the species range extends into Mexico there is limited gene flow between these populations and the populations remaining in the United States (Service 2003b). In addition, the populations of gnatcatchers in Mexico are treated very differently than those located within the United States. In Mexico, the gnatcatcher is not regulated or managed by the Mexican Government (Diario Official 2000). Therefore, take of individuals or loss and degradation of habitat are not controlled in this portion of the species' range.

The loss, fragmentation, and adverse modification of habitat are the principal reasons for the gnatcatcher's federally threatened status (Service 1993a). The amount of coastal sage scrub available to gnatcatchers has continued to decrease during the period after the listing of the species. It is estimated that up to 90 percent of coastal sage scrub vegetation has been lost as a result of development and land conversion (Westman 1981a, 1981b; Barbour and Major 1977), and coastal sage scrub is considered one of the most depleted habitat-types in the United States (Kirkpatrick and Hutchinson 1977, O'Leary 1990). The elimination of nearby habitat may artificially increase populations in adjacent preserved habitat; however, these population surpluses may be lost in subsequent years due to crowding and lack of resources (Scott 1993). In addition, agricultural use, such as grazing and field crops, urbanization, air pollution, and the introduction of non-native plants have all had an adverse impact on extant sage scrub habitat. A consequence of urbanization that is contributing to the loss, degradation, and fragmentation of coastal sage scrub is an increase in wildfires due to anthropogenic ignitions. High fire frequencies and the lag period associated with recovery of the vegetation may significantly

reduce the viability of affected subpopulations (Dudek and Associates 2000). Furthermore, nest-parasitism by the brown-headed cowbird and nest predation threatens the recovery of the gnatcatcher (Atwood 1980, Unitt 1984).

Early studies suggested that the California gnatcatcher is highly sensitive to the effects of habitat fragmentation and development activity (Atwood 1990; ERCE 1990; Ogden unpublished data). The loss of coastal sage scrub vegetation has been associated with an increasing degree of habitat fragmentation, which reduces habitat quality and promotes increased levels of nest predation and brood parasitism, and ultimately, increased rates of local extinction (Wilcove 1985, Rolstad 1991, Saunders *et al.* 1991, Soulé *et al.* 1988). Although the published literature on this subject is based on studies in forested landscapes, the ecological implications of these studies are applicable to other landscape types such as coastal sage scrub.

An important corollary of habitat fragmentation is reduction of opportunity for successful natal dispersal. Dispersal of gnatcatchers is critical to demographic and genetic soundness of the population, and to population persistence of gnatcatchers in the fragmented habitat characteristic of coastal southern California. Landscape connectivity enhances population viability for many species, and, until recently, most species lived in well-connected landscapes (Beier and Noss 1998). Well-designed studies offer strong evidence that corridors provide sufficient connectivity to improve the viability of populations in habitats connected by corridors (Beier and Noss 1998). For relatively sedentary bird species such as gnatcatchers, connectivity of habitat patches is probably the most important landscape feature for maintaining species diversity of native biota (Soulé *et al.* 1988). Corridors counteract the effects of fragmentation, and should eliminate or minimize the attrition of species over time by facilitating dispersal and recolonization (Willis 1974, Diamond 1975, Brown and Kodric-Brown 1977, Frankel and Soulé 1981, Soulé and Simberloff 1986, Noss and Harris 1986, Forman and Godron 1986, Diamond *et al.* 1987, Noss 1987). Linkages that support resident populations of animals are more likely to function effectively as long-distance dispersal conduits for those species (Bennett 1990).

In addition to development and land conversion, the recent occurrence of large-scale wildfires throughout southern California likely temporally reduced the amount of gnatcatcher habitat available throughout the species' range. For example, in October 2003, severe wildfires throughout southern California resulted in the temporal loss of approximately 24,786 acres (21 percent) of gnatcatcher designated critical habitat in San Diego County, and approximately 39,418 acres (10 percent) of gnatcatcher designated critical habitat in the northern extent of the species' range, which includes Orange, Riverside, Los Angeles, San Bernardino and Ventura Counties; this loss represents an overall temporal perturbation of 64, 204 acres (12 percent) of designated critical habitat across the species' range. These fires likely impacted several known source populations of gnatcatchers in San Diego County.

Atwood *et al.* (1998) and Bontrager *et al.* (1995) found that extensive wildfires (e.g., the 2003 fires throughout San Diego County) result in adverse impacts to gnatcatcher populations within unburned areas, as well as within the burn area, due to increased mortality resulting from excessive competitive interactions between resident birds within unburned areas and birds displaced by the fires. Studies conducted after the 1993 Laguna Fire in Orange County (Wirtz *et*

al. 1995, Bontrager *et al.* 1995, Beyers and Wirtz 1995, Atwood *et al.* 1998) suggest that post-fire gnatcatcher population recovery is likely dependant on the amount of suitable vegetation remaining within the burned area, as well as the presence of gnatcatcher source populations in close proximity to areas affected by the fire. Furthermore, Beyers and Wirtz (1995) found that following a fire, regrowing coastal sage scrub would not be recolonized by gnatcatchers until total shrub cover approaches 50 percent, which is expected to take a minimum of four to five years. Due to the scope and intensity of the recent Southern California fires, the areas affected are expected to take several years to recover fully; therefore, any remaining gnatcatcher source populations, and remaining gnatcatcher habitat, are important to the survival and recovery of the species.

To date, a recovery plan has not been developed for the gnatcatcher. However, pursuant to the Coastal Sage Scrub Natural Communities Conservation Program (CSSNCCP), developed in 1993, San Diego County was divided into four subareas for conservation/preserve planning for the long-term conservation and protection of the coastal sage scrub vegetation community of Southern California, and the species, including the gnatcatcher, that it supports (California Department of Fish and Game and California Resource Agency 1993). The four subareas within San Diego County include the MSCP (finalized), the MHCP (finalized), the North County MSCP Plan (currently in preparation; NCMSCP), and the East County MSCP (initiated; EC MSCP). However, of these four subareas, only three (MSCP, MHCP, and NCMSCP) support viable populations of the gnatcatcher. A recovery plan for the gnatcatcher would describe the current threats to the species, the current population trend, the scope of the recovery effort, the recovery criteria, necessary recovery actions, and define recovery units. Without a recovery plan, the three subareas that support viable populations of the gnatcatcher, within San Diego County (MSCP, MHCP, and NCMSCP), as well as Camp Pendleton and Marine Corps Air Station Miramar (which are not a part of the CSS NCCP), serve as "recovery units" for the species within San Diego County. Multiple species plans developed, pursuant to the CSS NCCP, within Riverside, Orange, Los Angeles, and San Bernardino counties would similarly serve as “recovery units” for the gnatcatcher in the northern/eastern portion of its range.

3.2.8 Threats

The primary threats to the long-term survival and recovery of the gnatcatcher are habitat loss, fragmentation, and adverse modification of habitat due to increased urbanization throughout the range of the species. In association with urbanization, the introduction of non-native plants, non-native predators (i.e., domestic animals and brown-headed cowbirds), and changes in natural fire regimes (i.e., fire suppression or increased fire frequency due to anthropogenic ignitions) have all had an adverse impact on extant sage scrub habitat. Therefore, the survival and recovery of the gnatcatcher is dependent on: (1) the protection of large, intact blocks of suitable breeding and resident habitat; (2) known source populations of gnatcatchers; and, (3) suitable linkage habitat capable of providing for genetic exchange between known source populations and dispersal between source populations and smaller populations throughout the species’ range. In addition, recovery units (multiple species preserves) have been defined as geographic, or otherwise identifiable, subunits of the species that individually are necessary to conserve the genetic diversity, population stability, demographic robustness, important life history stages, or

some other feature necessary for the long-term survival of the species in the wild (Service and National Marine Fisheries Service 2002). Therefore, stabilizing and expanding the populations of gnatcatchers within the previously described gnatcatcher "recovery units", through the development of an effective preserve design, would provide for the species' conservation needs, and preserve the coastal sage scrub vegetation community on which this species depends. Because 60 percent of the remaining gnatcatchers within the United States occur within San Diego County, the protection of gnatcatcher habitat and the maintenance of gnatcatcher population viability within San Diego County are particularly important for the survival and recovery of the species as a whole.

In October 2007, large wildfires returned to San Diego County burning approximately 370,000 acres. A complete analysis of impacts to this species has not been completed. Considering only Department of the Interior-owned lands in San Diego County, approximately 23,800 acres of designated gnatcatcher critical habitat, 19,700 acres of "very high" rated-modeled habitat, and 18,000 acres of "high" rated-modeled habitat burned. The actual total acreage of gnatcatcher habitat (critical, suitable, modeled) burned during the 2007 fires is likely much higher as non-Department of the Interior lands containing gnatcatcher habitat also burned.

3.2.9 Rangewide Conservation Needs

Based on the threats analysis above, the gnatcatcher has the following needs to survive and recover.

1. Functional habitat should be maintained in large, interconnected blocks sufficient to support viable, interconnected populations. In some cases, such areas may require enhancement or creation of new habitat.

2. Gnatcatcher habitat should be protected from changes in natural fire regimes as a result of fire suppression or increased fire frequency due to anthropogenic ignitions. Habitat should be managed to adequately mitigate those effects, should they occur.

3. The quality of gnatcatcher habitat should be maintained at high levels to include management of exotic plant and animal species (e.g., brown-headed cowbirds, feral cats, etc.).

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

3.3.1 Listing Status

The least Bell's vireo was federally listed as endangered on May 2, 1986 (*Federal Register* 51: 16474), and State listed as endangered in California on October 2, 1980. A draft recovery plan was prepared for this species in March 1998 (Service 1998). On October 2, 2006, the Service announced completion of a 5-year review for the least Bell's vireo and recommended that the species be downlisted from endangered to threatened status (Service 2006).

3.3.2 Critical Habitat

In 1994, the Service designated areas encompassing approximately 38,000 acres in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, and San Diego Counties, California, as critical habitat for the least Bell's vireo (*Federal Register* 59: 4845). Only those areas with PCEs are critical habitat for the vireo. The PCEs that support feeding, nesting, roosting and sheltering are essential to the conservation of the vireo. These PCEs can be described as riparian woodland vegetation that generally contains both canopy and shrub layers, and includes some associated upland habitats. Vireos meet their survival and reproductive needs (food, cover, nest sites, nestling and fledgling protection) within the riparian zone in most areas. In some areas they also forage in adjacent upland habitats, which may include sage scrub and grassland communities (Service 1994).

3.3.3 Species Description

Vireo bellii pusillus is a small migratory songbird. It is olive-gray above and whitish on its underparts with two dull white wing stripes and dull white to olive narrow margins on the outer border of its wings and tail. Males and females are identical in plumage. *Vireo b. pusillus* is easily distinguished by its song, a rapid bubbling series of rough notes, increasing in tempo and intensity toward a rapid climax. Phrases of the song are alternatively slurred upward and downward. Eggs are on average 0.7 inch long, and dull white, often with fine brown, black, or reddish-brown dots concentrated on the larger end (Brown 1993).

Vireo b. pusillus is in the family Vireonidae, and is one of four subspecies of *Vireo bellii* (Bell's vireo) that have been recognized. Although all subspecies are similar in behavior and life history, they are isolated from one another in both their breeding and wintering grounds (Hamilton 1962).

3.3.4 Distribution

The least Bell's vireo was historically found in valley bottom riparian habitats from Tehama County, California, southward (but locally) to northwestern Baja California, Mexico. It ranged from near the Pacific coast to as far east (inland) as the Owens Valley, Death Valley, and along the Mojave River in California (Grinnell and Miller 1944). More than 99 percent of the remaining vireos occurred in southern California (Santa Barbara County and southward) at the time of listing in 1986, with San Diego County containing 77 percent of the population. While more than 99 percent still remain in southern California, the populations are now more evenly distributed with 54 percent of the total population occurring in San Diego County and 30 percent of the population occurring in Riverside County; however, there has been only a slight shift northward in the species' overall distribution. Least Bell's vireo breeding pairs currently occur in San Diego, Riverside, Orange, San Bernardino, Los Angeles, Ventura, Santa Barbara, Inyo, and Stanislaus counties, California (Service 2006). According to Grinnell and Miller (1944) 4,000 feet is the upper elevational limit to least Bell's vireo occurrence in coastal southern California.

3.3.5 Habitat Affinity

The least Bell's vireo primarily occupies riparian habitats that typically feature dense cover within three to seven feet of the ground and a dense, stratified canopy. It inhabits low, dense riparian growth along water or along dry parts of intermittent streams. The understory is typically dominated by sandbar willow (*Salix hindsiana*), mule fat (*Baccharis salicifolia*), individuals of other willow species such as arroyo willow (*Salix lasiolepis*) or black willow (*Salix gooddingii*), and one or more herbaceous species (Salata 1983a, 1983b, Zembal 1984, Zembal *et al.* 1985). Important overstory species include mature arroyo willows and black willows. Other overstory species that may contribute to vireo habitat include cottonwoods (*Populus* spp.), western sycamore (*Platanus racemosa*), and coast live oak (*Quercus agrifolia*). It primarily nests in small, remnant segments of vegetation typically dominated by willows and mule fat but may also use a variety of shrubs, trees, and vines. Nests are typically built within three feet of the ground in the fork of willows, wild rose (*Rosa californica*), mule fat, or other understory vegetation (Franzreb 1989). Cover surrounding nests is usually a moderately open midstory with an overstory of willow, cottonwood, sycamore, or oak. Crown cover is usually more than 50 percent and contains occasional small openings. The most critical structural component to least Bell's vireo breeding habitat is a dense shrub layer at two to 10 feet above the ground (Franzreb 1989). The birds forage in riparian and adjoining chaparral habitat (Salata 1983b).

3.3.6 Life History

The least Bell's vireo exhibits year-round diurnal activity and is known to be a nocturnal migrant (Brown 1993). This subspecies feeds primarily on insects and spiders, and rarely on fruit (Brown 1993). Insects consumed include true bugs, beetles, bees, wasps, ants, snails, grasshoppers, moths, and butterflies (Terres 1980). The vireo forages primarily within willow (*Salix* spp.) stands or associated riparian vegetation with forays into non-riparian vegetation including chaparral and oak woodlands later in the breeding season (Gray and Greaves 1984, Salata 1983b, Kus and Minor 1987). Individuals travel between 10 and 200 feet while foraging, with the majority of these destinations occurring within 98 feet of the edge of riparian vegetation (Kus and Minor 1987). Least Bell's vireo forage in all vertical vegetation layers from zero to 66 feet but most feeding is concentrated in the lower vegetation layers between zero to 20 feet (Kus and Minor 1987, Salata 1983b). Feeding behavior largely consists of collecting prey from leaves or in bark crevices while perched or hovering, and less frequently by capturing prey by aerial pursuit (Salata 1983a, 1983b).

Least Bell's vireo are mainly monogamous, however, some individuals of both sexes are sequentially polygamous within the breeding season (Greaves 1987). Male vireos contest and establish breeding territories (Barlow 1962) which range in size from 0.5 to 7.4 ac. (Gray and Greaves 1984, Collins *et al.* 1992) with most averaging between one and three ac. (Service 1998). Least Bell's vireo territories are maintained by threat and physical confrontation early in the breeding season, and vocal warnings later in the season (Barlow 1962).

The breeding season for least Bell's vireo extends from mid-March to mid- or late-September (Service 1986). A majority of the birds arrive from the Mexican wintering areas by the end of March, and depart by end of August (Zeiner *et al.* 1990). Most breeding vireos depart the breeding grounds by the third week of September, and only very few are found wintering in the United States (Garrett and Dunn 1981, Salata 1983b). Nests are typically suspended in forked branches of many different riparian species with no clear preference for any particular species (Nolan 1960, Barlow 1962, Gray and Greaves 1984). Bell's vireo nests are usually placed between 1.6 and 4.9 feet from the ground with a range between 0.7 and 26.2 feet (Brown 1993). Females probably select the nesting sites but both genders participate in nest construction (Barlow 1962). Nests appear to only be used once with new ones constructed after nest failure or for successive broods (Greaves 1987). Between two to five (typically three or 4) eggs are laid shortly after nest construction (Service 1998). A typical clutch is incubated by both parents for about 14 days with the young remaining in the nest for another 10 to 12 days (Pitelka and Koestner 1942, Nolan 1960, Barlow 1962). A female least Bell's vireo may produce two broods of young and occasionally up to four per season, although it is thought that most are capable of successfully raising only one brood (Franzreb 1989).

3.3.7 Population Trend

No other passerine (perching songbird) species in California is known to have declined as dramatically as the least Bell's vireo (Brown 1993). The narrow and limited nature of the habitat of the least Bell's vireo makes the subspecies more susceptible to major population reductions than the other subspecies of Bell's vireo. Intensive surveys of virtually all potential breeding habitat were conducted between 1977 and 1985 (Gaines 1977, Goldwasser 1978, Goldwasser *et al.* 1980), resulting in occurrences at only 46 of over 150 former localities. Once common, the vireo populations had decreased substantially by the late 1980's due to loss and degradation of habitat as well as from brown-headed cowbird (*Molothrus ater*) parasitism (Goldwasser *et al.* 1980).

By the time the vireo was federally listed as endangered in 1986, the rangewide population in the United States was estimated to be 300 pairs, all of which occurred in California, and a majority of which occurred in San Diego County. The United States population occurs in San Diego, San Bernardino, Ventura, Santa Barbara, Santa Ynez, Inyo, Kern, Monterey, Orange, Riverside, and Los Angeles counties (Service 1986). The vireo population in the United States has increased 10-fold since its listing in 1986, from 291 to 2,968 known territories between 2001 and 2005. Population growth has been greatest in San Diego County (621 percent increase) and Riverside County (2,997 percent increase), with lesser but significant increases in Orange, Ventura, San Bernardino, and Los Angeles counties. Since its listing in 1986, the vireo population in Santa Barbara County has declined by 54 percent and by 79 percent since its post-listing peak in 1986. Kern, Monterey, San Benito, and Stanislaus counties have had a few isolated individuals and/or breeding pairs since the original listing, but these counties have not supported any sustained populations. The number of individuals in Inyo County has increased to 11 territorial locations; however, these birds occur over widely dispersed locations, and there is some uncertainty as to whether these individuals are *Vireo bellii pusillus* or *V. b. arizonae* (Arizona Bell's vireo) (Service 2006).

Within San Diego County, most of the vireo occur within the following areas in order of number: Marine Corps Base Camp Pendleton (Camp Pendleton)/Santa Margarita River (827 territories), San Luis Rey River (233 territories), Tijuana River (150 territories), Sweetwater River (103 territories), and San Diego River (66 territories). Thus, within the 11 Population Units designated in the draft recovery plan, the following areas have the greatest number of vireos in order of number: Camp Pendleton/Santa Margarita River (827 territories), Santa Ana River (813 territories), and the San Luis Rey River (233 territories) (Service 2006).

Vireos on the Santa Margarita River at Camp Pendleton increased from 15 males in 1980 to over 1000 in 1998. Similar increases occurred at the Prado Basin on the Santa Ana River where the vireo population grew from 12 males in 1985 to 345 pairs in 1998 (Service 1998). In 2004, 413 pairs of vireos, 177 unpaired males, and a minimum of 767 fledged young were detected in the Prado Basin (Pike *et al.* 2004). The Tijuana River population grew from 13 males in 1990 to 139 males in 1998 (Wells and Turnbull 1998) and to 150 territories during the 2004-2005 breeding season (Service 2006).

The first breeding pair of vireos detected in the San Joaquin Valley since the listing of the vireo successfully bred at the San Joaquin NWR in Stanislaus County in 2005 and 2006 (Service 2006). However, preliminary reports from vireo surveys conducted in 2006 indicate that the vireo population at two key locations, Camp Pendleton and the Prado Basin on the Santa Ana River, may have declined by up to 15 percent. Possible causes for these reported declines are uncertain (Service 2006). Although single year declines should be viewed with caution when evaluating population trends, they indicate population volatility associated with a higher risk of extinction (Fagan *et al*. 1999). In summary, the United States population from Ventura County southward has increased significantly, while the population from Santa Barbara County northward has declined (Service 2006).

3.3.8 Threats

Causes for decline of the least Bell's vireo include destruction of habitat, river channelization, water diversions, lowered water tables, gravel mining, agricultural development, and cowbird parasitism. Management programs aimed at reducing numbers of cowbirds have been considered very successful at maintaining some local populations (Small 1994). Infectious disease is also a real threat due to the potential for entire bird populations to be killed by diseases such as the West Nile Virus. Although control of giant reed (*Arundo* spp.) has made great progress since the original listing of the vireo, invasions by other exotic species (e.g., *Tamarix* ssp. and perennial pepperweed [*Lepidium latifolium*]) continue to degrade existing riparian habitat and impede recovery efforts (Kus and Beck 1998, Hoffman and Zembal 2006). Vireos are known to be sensitive to many forms of disturbance including noise, night lighting, and consistent human presence in an area. Excessive noise can cause vireos to abandon an area. Greaves (1989) hypothesized that the lack of breeding vireos in apparently suitable habitat was due to human disturbances (e.g., bulldozers, off-road vehicles, and hiking trails). He further suggested that buffer zones between natural areas and surrounding degraded and disturbed areas could be used to increase the suitability of some vireo habitat. It appears that vireos nesting in

areas containing a high proportion of degraded habitat have lower productivity (e.g., hatching success) than those in areas of high quality riparian woodland (Pike and Hays 1992).

Widespread habitat losses have fragmented most remaining populations into small, disjunct, widely dispersed subpopulations (Franzreb 1989). More than 90 percent of the original extent of riparian woodland in California had been eliminated at the time of listing, and most of the remaining 5 percent is in a degraded condition (Smith 1977, Dahl 1990, Service 1998). Oberbauer (1990) reported a 61 percent loss of riparian habitat for San Diego County. Habitat fragmentation negatively affects abundance and distribution of neotropical migratory songbirds, in part by increasing incidence of nest predation and parasitism (Small and Hunter 1988, Yahner and DeLong 1992). An objective, systematic estimate of the amount of available riparian habitat in California does not currently exist, although estimates for smaller regions indicate stable to increasing riparian habitat (Faber 2003). Though some unauthorized and unquantified loss of riparian habitat continues to occur (Hays 2006), and no systematic estimate of the State's available riparian habitat exists, riparian habitat in San Diego County appears to have stabilized since the listing of the vireo and has improved locally where afforded protection by the Act and other federal and State legislation (i.e., Clean Water Act, California Fish and Game Code Sections 1600-1616). It appears that riparian habitat connectivity may also be improving along the mainstems of some major rivers in southern California (e.g., on the Santa Margarita and Santa Ana Rivers, and to a lesser extent the San Luis Rey River) due to giant reed removal, restoration, and the reduction of high impact activities (e.g., sand mining operations) (Service 1998), but fragmentation may still be occurring on lower order tributary streams due to increasing urban development and associated flood control (Kus 2006).

Within the limited range of the vireo, all areas occupied by vireos are threatened by unauthorized clearing activities, placement of fill materials, and exotic species. In addition, all but the Sweetwater River, which is already channelized, are threatened by flood control, water transfers, and channelization and diversion projects. More specifically, the Santa Ynez River is threatened by water diversions, agricultural and urban development, and wetland draining. The Santa Clara River is most immediately threatened by a 20,000 unit housing development and construction of two bridges throughout a majority of this critical habitat area. The Santa Ana River continues to be threatened by two extensive water conservation projects which have periodic impacts by flooding the habitat. One of these, the Prado Basin Water Conservation and Water Control Operations Project, was authorized for the incidental take of 90 pair of vireos over the life of the project (biological opinion 1-6-99-F-75). Other projects and/or threats to the vireo on the Santa Ana River include the ongoing large Santa Ana River mainstem flood control project, Caltrans highway widening and bridge replacement projects, large-scale human recreation (including an active airport on Corps-owned lands) and an increasing human population and presence in or adjacent to the river. In San Diego County the upper Santa Margarita River is threatened by development and agriculture, the San Luis Rey and San Diego Rivers are threatened by agriculture, sand and gravel mining, recreation, residential/commercial/industrial development, transportation, wastewater treatment, water supply projects, and flood control projects; the Sweetwater River is protected from development but still faces indirect impacts from recreation; Jamul-Dulzura Creeks are threatened by sand and gravel mining, water supply projects, and flood control projects and channelization; and the Tijuana River is continually threatened by

increasing disturbance and destruction of riparian habitat from illegal off-road vehicle activity, vehicle activity by border patrol, and horseback riding.

Fire is also an ongoing threat to the vireo throughout its range. In October and November of 2003, southern California experienced significant wildfire activity. The fires were distinguishable into 15 areas and burned a total of approximately 743,439 acres in Los Angeles, Riverside, San Bernardino, San Diego, and Ventura counties. It is unclear how much habitat occupied by least Bell's vireo burned in the fires that occurred in 2003 because our location data is biased to areas with proposed projects (i.e., those areas where surveys were necessary), could represent duplicative data, and/or could be mapped as a large polygon without the detail of numbers of individual birds. However, 111,725 acres of riparian habitat exist within Los Angeles, Riverside, San Bernardino, San Diego, and Ventura counties and the fires burned 5,668 acres (5 percent) of this area. The most significant impacts occurred in San Diego (3,186 acres), San Bernardino (1,304 acres), and Ventura (1,116 acres) counties due to the Cedar, Old, and Simi fires. In the case of the Cedar fire alone, the fire burned 2,314 acres of riparian habitat in San Diego County.

In October 2007, large wildfires returned to San Diego County burning approximately 370,000 acres. A complete analysis of impacts to this species has not been completed. Considering only Department of the Interior-owned lands in San Diego County, approximately 748 acres of designated vireo critical habitat burned. The actual total acreage of vireo habitat (critical, suitable, modeled) burned during the 2007 fires is likely much higher as non-Department of the Interior lands containing vireo habitat also burned.

It is assumed that no individual vireos were harmed directly by these fires since the birds are migratory and were not in the areas that burned when the fires occurred. However, the loss of 1,104 acres of suitable habitat may indirectly affect the birds since they are known to be site tenacious.

It is expected that these areas would recover and again provide suitable habitat for vireo or flycatcher, albeit a longer process to become suitable flycatcher habitat. However, the degree to which this disturbance would increase non-native invasive wetland species such as Arundo and tamarisk is unknown. In addition, due to the lack of vegetation within the watershed, the rivers may experience significant debris flows which may also alter the riparian systems. It is still too early to determine the long term effects of the fires; however, there could be a net loss of suitable habitat until a restoration program is initiated and successful.

3.3.9 Rangewide Conservation Needs

Based on the nature of the primary threats to the least Bell's vireo over the majority of its range, the survival and recovery needs of the vireo are integrally linked with the following biological principles: (1) the presence of functionally intact riparian communities with structural complexity and a dense understory, (2) the absence or control of brown-headed cowbirds, and (3) well connected riparian corridors with self-sustaining vireo populations in relatively close proximity to one another to facilitate survival and movement.

In March 1998, a draft recovery plan for the vireo was prepared by the Service (Service 1998). The Plan describes a strategy for reclassification, recovery, and delisting. Instrumental to this strategy is securing and managing riparian habitat within the historical breeding range of the vireo, annual monitoring and rangewide surveys, and research activities necessary to monitor and guide the survival and recovery of the vireo population range wide. Criterion 1 of the Plan identifies the San Luis Rey River as one of 14 population/metapopulation units that should be managed and protected to support stable or increasing vireo populations/metapopulations, consisting of several hundred or more breeding pairs. A Priority 1 recovery task includes protecting and managing riparian and adjacent upland habitats within the vireo's historical range and more specifically developing a management plan for the San Luis Rey River which addresses the major threats of agriculture, flood control, water supply projects, sand and gravel mining, recreation, residential/ commercial/industrial development, transportation, wastewater treatment projects, and unauthorized placement of fill materials, clearing, and herbicide activities (Service 1998).

Specifically, the draft recovery plan for the vireo indicates that the following criteria must be met to consider the vireo recovered:

1. Stable or increasing least Bell's vireo populations/ metapopulations, each consisting of several hundred or more breeding pairs, that are protected and managed at the following sites: Tijuana River, Dulzura Creek/Jamul Creek/Otay River, Sweetwater River, San Diego River, San Luis Rey River, Camp Pendleton/Santa Margarita River, Santa Ana River, an Orange County/Los Angeles County metapopulation, Santa Clara River, Santa Ynez River, and an Anza Borrego Desert metapopulation;

2. Stable or increasing least Bell's vireo populations/metapopulations, each consisting of several hundred or more breeding pairs established, protected, and managed for at the following sites: Salinas River, a San Joaquin metapopulation, and a Sacramento Valley metapopulation; and

3. Threats are reduced or eliminated so that least Bell's vireo populations/metapopulations listed above are capable of persisting without significant human intervention, or perpetual endowments are secured for cowbird trapping and exotic plant (*Arundo*) control in riparian habitat occupied by the least Bell's vireo. As noted above, the only areas where there are populations of several hundred or more breeding pairs documented is the Prado Basin and Marine Corps Base Camp Pendleton.

Only the Camp Pendleton/Santa Margarita River and the Santa Ana River populations have clearly met and exceeded the target of "several hundred or more breeding pairs" of vireos at the designated site. However, the general trend has been positive. While the 11 populations designated in the first criterion only represent a portion of the known vireo populations, they contain approximately 90 percent of the known vireo locations (Service 2006).

3.4 *Empidonax traillii extimus* (Southwestern willow flycatcher)

3.4.1 Listing Status

The southwestern willow flycatcher was federally listed as endangered on February 27, 1995 (60 FR 10694) primarily due to extensive habitat loss. The California Department of Fish and Game lists this species as endangered on December 3, 1990. A final recovery plan for the southwestern willow flycatcher was published in the Federal Register on March 5, 2003 (68 FR 10485).

3.4.2 Critical Habitat

Critical habitat for the flycatcher was designated on October 19, 2005, encompassing approximately 120,824 acres in Apache, Cochise, Gila, Graham, Greenlee, Maricopa, Mohave, Pinal, Pima, and Yavapai counties in Arizona, Kern, Santa Barbara, San Bernardino, and San Diego counties in southern California, Clark County in southeastern Nevada, Grant, Hidalgo, Mora, Rio Arriba, Socorro, Taos, and Valencia counties in New Mexico, and Washington County in southwestern Utah (70 FR 60886). Fifteen Management Units found in five Recovery Units were designated as critical habitat for the flycatcher. The five Recovery Units are: 1) Coastal California; 2) Basin and Mojave in California; 3) Lower Colorado River in Nevada, California/Arizona Border, Arizona, and Utah; 4) Gila in Arizona and New Mexico; and 5) Rio Grande in New Mexico (Service 2005b).

The specific biological and physical features, otherwise referred to as the primary constituent elements (PCEs), essential to the conservation of the southwestern willow flycatcher include, but are not limited to: Space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, and rearing (or development) of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species (Service 2005b).

3.4.3 Species Description

The southwestern willow flycatcher, a relatively small, insectivorous songbird, is approximately 5.75 inches in length. Both sexes of *E. t. extimus* have grayish-green back and wings, whitish throats, light gray-olive breasts, and pale, yellowish bellies. The song is a sneezy “fitz-bew” or “fitz-a-bew” and the typical call is a breathy “whit” (Unitt 1987). *Empidonax t. extimus* is a recognized subspecies of the willow flycatcher (*Empidonax traillii*). Although previously considered conspecific with the alder flycatcher (*Empidonax alnorum*), *E. traillii* is distinguishable from that species by morphology (Aldrich 1951), song type, habitat use, structure and placement of nests (Aldrich 1953), eggs (Walkinshaw 1966), ecological separation (Barlow and MacGillivray 1983), and genetic distinctness (Seutin and Simon 1988). In turn, *E. t. extimus* is one of five subspecies of the willow flycatcher currently recognized (Hubbard 1987, Unitt 1987, Browning 1993). The willow flycatcher subspecies are distinguished primarily by differences in color and morphology (Unitt 1987). Unitt (1987) and Browning (1993) concluded that *E. t. extimus* is paler than other willow flycatcher subspecies. During the 2004 breeding

season, Paxton *et al.* experimented with the use of a Minolta Colorimeter to quantify plumage coloration variation in the willow flycatcher. Although the dataset was limited in terms of geographic distribution and sample size, preliminary analysis indicates that the colorimeter can detect substantial plumage variation within the willow flycatcher subspecies, and significant differences among the subspecies. Thus, the colorimeter may have the potential to assign subspecies status to individuals of unknown origin (i.e., migrants, wintering flycatchers) (Paxton *et al.* 2005). Sedgwick (2001) determined that the vocal signatures of the primary song form of *E. t. extimus* and the geographically adjacent subspecies, *E. t. adastus*, are distinctive and that regional populations of *Empidonax* have statistically unique vocal identities.

3.4.4 Distribution

The breeding range of the flycatcher includes most of the southwestern United States (Unitt 1987, Browning 1993) with data from 1993 to 2005 indicating that flycatcher breeding territories ranged from Arizona (40.8 percent), New Mexico (32.4 percent), California (15.7 percent), Nevada (5.6 percent), Colorado (5.2 percent), and Utah (0.3 percent) (Durst *et al.* 2006). Past records of breeding in Mexico are few and confined to extreme northern Baja California and Sonora (Howell and Webb 1995). Flycatchers winter in Mexico, Central America, and northern South America (Howell and Webb 1995).

3.4.5 Habitat Affinity

The flycatcher is restricted to willow-dominated riparian habitats, especially areas with abundant large trees, frequently in close proximity (i.e., seldom farther than a few dozen meters) to surface water or saturated soil (Sogge and Marshall 2000). Riparian habitat provides both breeding and foraging habitat for the species. The flycatcher nests in thickets of trees and shrubs approximately 13 to 23 feet or more in height with dense foliage from approximately zero to 13 feet above ground. The nest site plant community is typically even-aged, structurally homogeneous and dense (Brown 1988, Sedgewick and Knopf 1992). This species usually nests in the upright fork of a shrub but occasionally nests on horizontal limbs within trees and shrubs (Terres 1980). Historically, the willow flycatcher nested primarily in willows and mule fat with a scattered overstory of cottonwood (Grinnell and Miller 1944). Following more recent changes in riparian plant communities in the region, the species still nests in willows where available but is also known to nest in thickets dominated by tamarisk and Russian olive (Brown 1988). Typically, sites selected as song perches by male willow flycatchers show higher variability in shrub size than do nest sites and often include large central shrubs. Migrating willow flycatchers use habitats similar to breeding flycatchers, but would also use desert washes, oases, and open canyon woodlands near watercourses (Small 1994).

Fragmented riparian zones with large distances between willow patches and individual willow plants are not selected for either nesting or singing (Sedgewick and Knopf 1992). Flycatchers are generally not found nesting in narrow strips of riparian vegetation less than approximately 33 feet wide (Sogge and Tibbetts 1994, Sogge and Marshall 2000).

3.4.6 Life History

The southwestern willow flycatcher is a diurnally active species that begins singing at a predawn hour while within the territory (San Diego Natural History Museum 1995). The flycatcher is an insectivore that forages within and above dense riparian vegetation, taking insects on the wing or gleaning them from foliage (Service 1995). This species also forages in areas adjacent to nest sites which may be more open (Service 1995).

Males typically arrive in southern California at the end of April and females arrive approximately one week later. The southwestern willow flycatcher has a home range that is larger than the defended territory. This species initiates territorial defense in late May. Territory size varies from 0.59 to 1.33 acres. Adults depart from the breeding territory in mid-August to early September (San Diego Natural History Museum 1995). Territory size varies greatly, probably due to differences in population density, habitat quality, and nesting stage. Estimated breeding territory sizes generally range from approximately 0.25-5.7 ac, with most in the range of approximately 0.5-1.2 ac (Service 2002a). The species has been reported to sing and defend winter territories in Mexico and Central America and may defend winter territories in northern South America. Lynn *et al*. (2003) surveyed a total of 42 locations in El Salvador, Costa Rica, and Panama from 1998 to 2000. They found that occupied winter habitat was characterized by four main habitat components: (1) standing or slow moving freshwater and/or saturated soils; (2) patches or stringers of trees; (3) woody shrubs; and, (4) open areas such as pastures, savannas, or bodies of water bordering forest edges.

Southwestern willow flycatchers typically raise one brood per year (Service 1995). The clutch size ranges from two to five; the average clutch size is 3.4 eggs in coastal southern California. These species usually have a monogamous mating system within one nesting season although not all territorial males are mated (San Diego Natural History Museum 1995). The southwestern willow flycatcher fledgling leaves the nest at age 12 to 15 days in early July (Service 1995) and usually disperses from the natal territory at age 26 to 30 days. About 25 percent of adults return to their territory from the previous year and at least 20 percent of juveniles return to the natal area which is usually 1.2 to 2.5 miles from the natal territory. Adults usually depart from their breeding territory between 12 August and 4 September (San Diego Natural History Museum 1995).

From 1997 through 2000, 66 percent to 78 percent of flycatchers known to have survived from one breeding season to the next returned to the same breeding site; on the other hand, 22 percent to 34 percent of returning birds moved to different sites. Both males and females move within and between sites, with males showing slightly more site fidelity. Within-drainage movements are more common than between-drainage movements. Typical distances moved range from 1.2 miles to 18 miles; however, long-distance movements of up to 136 miles have been observed on the lower Colorado River and Virgin River (Service 2002a).

3.4.7 Population Trend

Although the breeding range extends through six states, Kus and Sogge (2003) noted that southwestern willow flycatchers have declined to the point of near extinction as urbanization and

burgeoning human populations have resulted in widespread loss and degradation of riparian habitat. In California, there has been a 95 percent reduction of riparian habitat over the last century and flycatchers are now absent as a breeding species from the Central Valley of California, where they were once common (Harris *et al.* 1987). Flycatchers have been dramatically reduced in number along the lower Colorado River, which historically probably supported one of the largest flycatcher populations in the Southwest (Unitt 1987). Durst *et al.* (2006) reported 1,214 territories located among 275 sites rangewide within the United States using data from 1993 to 2005. Over the range of the species, most (83 percent) breeding sites are small, both in terms of population size (five or fewer territories) and habitat patch size (Durst *et al.* 2006). Only 17 percent of the sites rangewide have more than five territories. Seven of these sites (populations) consist of 20 or more territories and only two sites have 50 or more territories, one of which is the upper San Luis Rey River (near Lake Henshaw) in San Diego County, which is outside of the project area and action area (Service, unpub. data). Not all of the 275 known sites are surveyed every year. In 2005, 142 sites were surveyed with 999 territories detected (Durst *et al.* 2006). Flycatcher territories have disappeared from 133 of the 275 sites tracked since 1993. All but two of these sites where flycatcher territories are no longer detected were composed of five or fewer territories (Durst *et al.* 2006). The two exceptions were the Colorado River inflow to Lake Mead and PZ Ranch on the San Pedro River which were larger sites where habitat was destroyed by flooding and fire, respectively (Durst *et al.* 2006). This indicates that even the "larger" sites of 50 or more territories are vulnerable to catastrophic events (e.g., fire, disease, or floods) and flood control/water supply projects.

The primary flycatcher drainages in California are the San Luis Rey River (58 territories), the Santa Ana River (34 territories), the Owen's River (28 territories), the Santa Margarita River (21 territories), and the Kern River (20 territories) (Durst *et al.* 2006).

The rangewide population of flycatcher has not experienced a significant increase in numbers as the vireo population has. This may be a byproduct of the flycatchers need for mature vegetation (greater than eight years old), their need for nearby open water, and the reduced benefit that cowbird trapping provides the flycatcher.

3.4.8 Threats

The southwestern willow flycatcher has declined primarily due to loss, alteration, and degradation of riparian habitats and brown-headed cowbird nest parasitism (Unitt 1987, Service 2002a). Its riparian nesting habitat tends to be uncommon, isolated, and widely dispersed. Historically, these habitats have always been dynamic and unstable in place and time, due to natural disturbance and regeneration events such as floods, fire, and drought. With increasing human populations and the related industrial, agricultural, and urban developments, these habitats have been modified, reduced, and destroyed by various mechanisms. Riparian ecosystems have declined from reductions in water flow, interruptions in natural hydrological events and cycles, physical modifications to streams, modification of native plant communities by invasion of exotic species, and direct removal of riparian vegetation. Wintering habitat has also been lost and modified for this and other Neotropical migratory birds. The major mechanisms resulting in loss and modification of habitat involve water management and land use practices (Service 2002a).

Fire is an imminent threat to occupied and potential southwestern willow flycatcher breeding habitat. Although fires occurred to some extent in some of these habitats historically, many native riparian plants are neither fire-adapted nor fire-regenerated. Thus, fires in riparian habitats are typically catastrophic, causing immediate and drastic changes in riparian plant density and species composition (Service 2002a).

In October 2007, large wildfires returned to San Diego County burning approximately 370,000 acres. A complete analysis of impacts to this species has not been completed. Considering only Department of the Interior-owned lands in San Diego County, approximately 21 acres of designated flycatcher critical habitat burned. The actual total acreage of flycatcher habitat (critical, suitable, modeled) burned during the 2007 fires is likely much higher as non-Department of the Interior lands containing flycatcher habitat also burned.

The Recovery Plan indicates that brood parasitism negatively affects the flycatcher, by reducing reproductive performance. Parasitism typically results in reductions in number of flycatcher young fledged per female per year (Service 2002a). Brown-headed cowbirds have probably occurred naturally in much of the flycatcher's range, for thousands of years (Lowther 1993). However, they likely increased in abundance with European settlement, and established in southern California only since 1900 (Rothstein 1994). However, studies have determined that nest parasitism has less of an effect on flycatchers than on vireos and that flycatchers have not responded to cowbird trapping in the same manner that vireos have (Kus and Whitfield 2005).

3.4.9 Rangewide Conservation Needs

The Service published a final Recovery Plan for the southwestern willow flycatcher on March 5, 2003, identifying the protection, restoration, and creation of habitat as necessary to conserve this species (Service 2003a). The breeding range of the flycatcher covers six states and the Plan specifically identifies six Recovery Units and 32 Management Units that should be managed to meet these objectives in a manner sufficient to promote stable or increasing flycatcher

populations. The Recovery Plan states that the Coastal California Recovery Unit had 19 percent of the known flycatcher territories rangewide. The Recovery Plan lists the Gila Recovery Unit as having 46 percent of the known flycatcher territories, which is the highest of all of the units. The other four units range from less than one percent (Upper Colorado) to 15 percent of the known flycatcher territories. Based on this information, the Coastal California Recovery Unit has the second highest number of known flycatcher territories identified in the Recovery Plan.

Each Recovery Unit is expected to serve as a metapopulation for the flycatcher. In functioning metapopulations, increases or decreases in one population may affect other populations. Thus, it is important to meet and maintain recovery objectives in each Recovery and Management unit, each of which may influence adjacent units (Service 2002a).

The Recovery Plan identifies guidelines that should be applied to projects to ensure recovery of the flycatcher. These guidelines include preventing the loss of flycatcher habitat; however, if such temporary impacts, permanent loss, or degradation is imminent, the guidelines recommend habitat replacement, permanent protection, and management within the same Management Unit. It states that loss of flycatcher habitat should be replaced with creation of habitat at a relatively high ratio since there is a high degree of uncertainty flycatchers would colonize created habitat. The Recovery Plan also states that cowbird trapping should not be used to offset actions that may result in loss, fragmentation, or modification of occupied or potential habitat.

The Recovery Plan requires a minimum number of territories for each management unit in order to down-list the flycatcher as threatened. The Coastal California Recovery Unit extends across 10 southern California counties. The Recovery Plan requires a minimum of 275 territories in this Recovery Unit for reclassification of the flycatcher (there were 186 known territories between 1993 and 2001) (Service 2002a). Nearly half (i.e., 125 of the 275 territories) are to be in the San Diego Management Unit. The San Diego Management Unit is expected to provide the majority of territories throughout all of the areas with flycatcher in the State of California. This is the third highest goal rangewide with the Gila River (625) and the Lower Colorado River (525) having the highest recovery goals (Service 2002a). In 2005, the Coastal California Recovery Unit had the fourth largest number of territories (135) and San Diego Management Unit had the fifth largest number of territories (86) of any one management unit throughout the29 management units. Three of the top were within the Gila Recovery Unit and the fourth was in the Rio Grande Recovery Unit (Durst *et al.* 2006).

A Population Viability Analysis (PVA) was conducted as part of the Recovery Plan for the flycatcher. The PVA found that metapopulations appear to be the most stable and secure in those areas where a large number of sites of substantial size are highly connected. There are only three such areas throughout the species' range that meet these criteria: Coastal California, Gila, and Rio Grande. In addition, the PVA found that the greatest benefit within a metapopulation should occur if sites are less than nine miles apart, each with 10 to 25 territories. Sites that are less than nine miles apart assure a high likelihood of connectivity. Once a threshold of about 25 territories/sites is reached, the benefit of increasing the number of birds diminishes. This risk-spreading strategy reduces the likelihood that catastrophic events (e.g., fire, flood, disease) would negatively impact all sites (Service 2002a). Such a strategy may be

even more important with the likely risk to avian species from infectious diseases such as West Nile Virus.

3.5 *Ambrosia pumila* (San Diego ambrosia)

3.5.1 Listing Status

San Diego ambrosia was listed as endangered on July 2, 2002 (67 FR 44372). This species is also on the California Native Plant Society's list 1B with an R-E-D (Rarity-Endangerment-Distribution) code of 3-3-2, and a California Natural Diversity Data Bank ranking of G1S1.1

3.5.2 Critical Habitat

Critical Habitat has not been proposed or designated for this species.

3.5.3 Species Description

San Diego Ambrosia is a clonal, perennial herb in the Asteraceae (sunflower) family. They arise from a branched system of rhizome-like roots (Service 1999b). This rhizomatous perennial habit results in groupings of aerial stems, often termed clones, that are, or at least were at one time, all attached to one another. The aerial stems are 0.5 to 3 decimeters (2 to 12 inches) rarely to 5 decimeters (20 inches) tall and densely covered with short hairs. The leaves are 3 to 4 times pinnately divided into many small segments and are covered with short, soft, gray-white, appressed hairs. The fruiting heads are enclosed by cup-like structures that have no spines, although some reports note a few vestigial spines. *A. pumila* may be distinguished from other species of *Ambrosia* in the area by its leaves which are twice divided, involucres (cup-like structures) lacking hooked spines, and lack of longer stiff hairs on the stems and leaves (Service 1999b).

3.5.4 Distribution

San Diego ambrosia is distributed from western Riverside County and western San Diego County, California, south in widely scattered populations along the west coast of Baja California, Mexico, to the vicinity of Cabo Colonet (Munz 1974, Reiser 1996). Additional populations occur in the central highlands of Baja California in the vicinity of Laguna Chapala near Catavinia (Reiser 1996). Some remnant populations have been found in urbanized places such as National City (Reiser 1996). It has also been reported from two areas in Oceanside (near El Camino Real and near Mission Boulevard in east Oceanside).

3.5.5 Habitat Affinities

San Diego ambrosia occurs in open habitats in coarse substrates near drainages, and in upland areas on clay slopes or on the dry margins of vernal pools. It also occurs in a variety of associations that are dominated by sparse grasslands or marginal wetland habitats such as river terraces, pools, and alkali playas (Munz 1974, Reiser 1996). Reiser (1996) noted that San Diego

ambrosia may also occur in creek beds and willow woodlands lacking tree canopies. Dudek and Associates (1999) found *Ambrosia pumila* in sandy loam textured soils, that were moderately acidic (pH ranging from 4.48 to 5.77) and low in salinity. San Diego ambrosia has been reported from 0-9 percent slopes on sandy or clay loams (Boling 1988). At Mission Trails Regional Park in San Diego, *Ambrosia pumila* occurred upon slope angles ranging from 0 to 18 percent with the vast majority of plants occurring at slope angles of less than 5 percent (Dudek & Associates, Inc. 1999). San Diego ambrosia generally occurs at low elevations (i.e., less than 180 meters in San Diego County) (Payne 1996). Commonly associated species include *Nasella* spp., *Avena* spp., *Bromus* spp., *Centaurea melitensis, Ambrosia psilostachya, Hemizonia fasciculata, Holocarpha virgata, Distichlis spicata, Eremocarpus setigerus,* and several vernal pool species.

3.5.6 Life History

Sexual reproduction and seed-set are not considered to be common in this taxon suggesting that propagation and dispersal by seed is limited. Because pollen is contained in the downward facing male cluster and is positioned above female flower heads, *Ambrosia pumila* may self-pollinate. Perennial *Ambrosia* species generally produce fewer seeds than annual species and invest more reproductive resources in below-ground root structures. Several biotechnical reports from transplantation efforts offer support for the lack of or low seed reproduction in the species (Dudek and Associates 2000). Ambrosia species are probably primarily wind pollinated, but other vectors (e.g. crawling insects) are a possibility (Payne, pers. Comm. 1998). Propagation is primarily through extensions of rhizomes indicating that each population could be a single plant and restricted to the immediate habitat. The species propensity to reproduce asexually suggests that the most common form of dispersal may be movement of rhizome-like structures either short distances by growth or longer distance by flood disturbance (Boling 1988, Marquez 1991-1993, and RECON 1993). *Ambrosia pumila* also partially relies on animal vectors for seed dispersal. *Ambrosia pumila* is sensitive to seasonal conditions and variation resulting in fluctuations in the above ground biomass. Flowers are generally present from June through September (Munz 1974).

3.5.7 Population Trend

This species has been reported from 49 occurrences in the United States (CDFG 2004). Four were combined with other occurrences, six were based on misidentified specimens, and two that were based on old collections have not been documented since 1936 (CDFG 2004). Three occurrences consist of transplanted plants from other occurrences that were subsequently partially or totally eliminated (CDFG 2004). There are, therefore, 34 verifiable native reported occurrences of this species. Twenty of these (59 percent) have been extirpated since the 1930's, nearly all by commercial development and activities associated with highway construction (Service 1999b). One occurrence, with a single stem in 1996, is considered non-viable due to the small size of the occurrence and the high level of disturbance of the site (CDFG 2004). Subtracting this non-viable occurrence, there are currently 15 extant native occurrences of this species. Twelve occurrences are in San Diego County, and three are in western Riverside County (City of Lake Elsinore 2000).

3.5.8 Threats

The primary threat to San Diego ambrosia is habitat loss due to urbanization, habitat fragmentation, isolation, and associated impacts from non-native species competition. Nearly all U.S. populations occur in sites that are disturbed and frequently affected by secondary impacts (e.g., trampling, non-native plant competition) due to proximity of development and infrastructure (e.g., roads and utilities).

3.5.9 Rangewide Conservation Needs

Ambrosia does not have a Recovery Plan developed. Nonetheless, to promote the long term survival and conservation of this species, the further loss and degradation of ambrosia habitat should be prevented. This would include reducing direct, indirect and cumulative effects. To avoid further loss of the species, populations should be permanently preserved and managed and new populations created.

4. ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation, and the impacts of State and private actions which are contemporaneous with the consultation in progress.

4.1 Site Characteristics and Surrounding Land Uses

The proposed SR-76 Melrose Drive to South Mission Highway Improvement project is located along the existing SR-76 from approximately 0.5 mile west of the SR-76/Melrose Drive intersection to approximately 0.6 mile east of the SR-76/South Mission Road intersection (Post-Mile 7.5-13.1). Native upland and riparian vegetation communities within this stretch of the river are known to support several federally listed species including arroyo toad, vireo, flycatcher, toad, gnatcatcher, and ambrosia.

The BSA consisted of the footprint of the proposed project and the Southern Alternative, all areas lying between the two alignments, and a 500-foot limit from the outer edges of the proposed shoulder (Figure 2). The BSA includes a portion of the San Luis Rey River, its associated floodplain, and other adjacent lands. The overall topography consists of a broad, level floodplain and valley floor bordered by steep hillsides divided by lesser tributaries. The San Luis Rey River and its floodplain are the dominant topographic features in the BSA. The historical floodplain of the San Luis Rey River can be considered relatively wide (approximately 1,000 ft wide) at the eastern terminus of the BSA but becomes much narrower (approximately 500 ft wide) at the western terminus. Portions of the historical floodplain have been converted to agricultural fields, ranches and the San Luis Rey Downs Country Club Golf Course. Elevation in the BSA ranges from approximately 100 ft above mean sea level (AMSL) along the San Luis

Rey River at the western terminus of the BSA to approximately 350 ft AMSL on the slopes above the San Luis Rey River in the eastern half of the BSA. Although existing within a semiarid region and exhibiting a braided channel at points along its reach, the San Luis Rey River is a perennial river. The source of water originates from its perennial tributaries: Little Gopher Canyon Creek, Bonsall Creek, Moosa Canyon Creek, Ostrich Farms Creek, and several unnamed tributaries. In addition, a substantial amount of water originates as urban runoff, particularly from the San Luis Rey Downs Country Club Golf Course, as well as agricultural irrigation runoff.

Soils within the BSA are dominated by sandy loams and riverwash. The riverbed at this location is composed of an alluvial deposit of riverwash (U.S. Department of Agriculture [USDA] 1973). The alluvium in the floodplain and valley floor can provide suitable substrate (friable) for burrowing animals, including arroyo toad.

Eighteen vegetation types were identified within the project's BSA (Table 1, Figures 12 and 13), including riparian, wetlands, uplands and other vegetation types (EDAW, 2007).

4.2 Relationship to Regional Preserves

The highway widening would occur in an area covered under the California Department of Fish and Game's NCCP program. The NCCP, which began in 1991, is a cooperative effort between public and private entities to protect habitats and species. The program's primary objective is to conserve local and regional biological diversity while accommodating compatible land use. The NCCP attempts to prevent/resolve issues related to species' listings by concentrating on the long-term stability of wildlife and plant communities, and including key interests in the process.

The project falls within the NCMSCP and Oceanside Subarea Multiple Habitat Conservation Plan; both plans are under development. These programs are comprehensive habitat conservation planning programs that address multiple species needs and the preservation of native vegetation communities. The programs propose a preserve system that would replace the approach of using project-specific biological mitigation, which by itself does not contribute adequately to the continued existence of sensitive species, or to the maintenance of natural biodiversity. Within the study corridor, pre-approved mitigation areas and preserve areas are associated with the San Luis Rey River Linkage along the river corridor. The San Luis Rey River Linkage extends east from the City of Ocean side boundary across Interstate 15 and the Rice Canyon Linkages and towards the Palomar Mountain foothills.

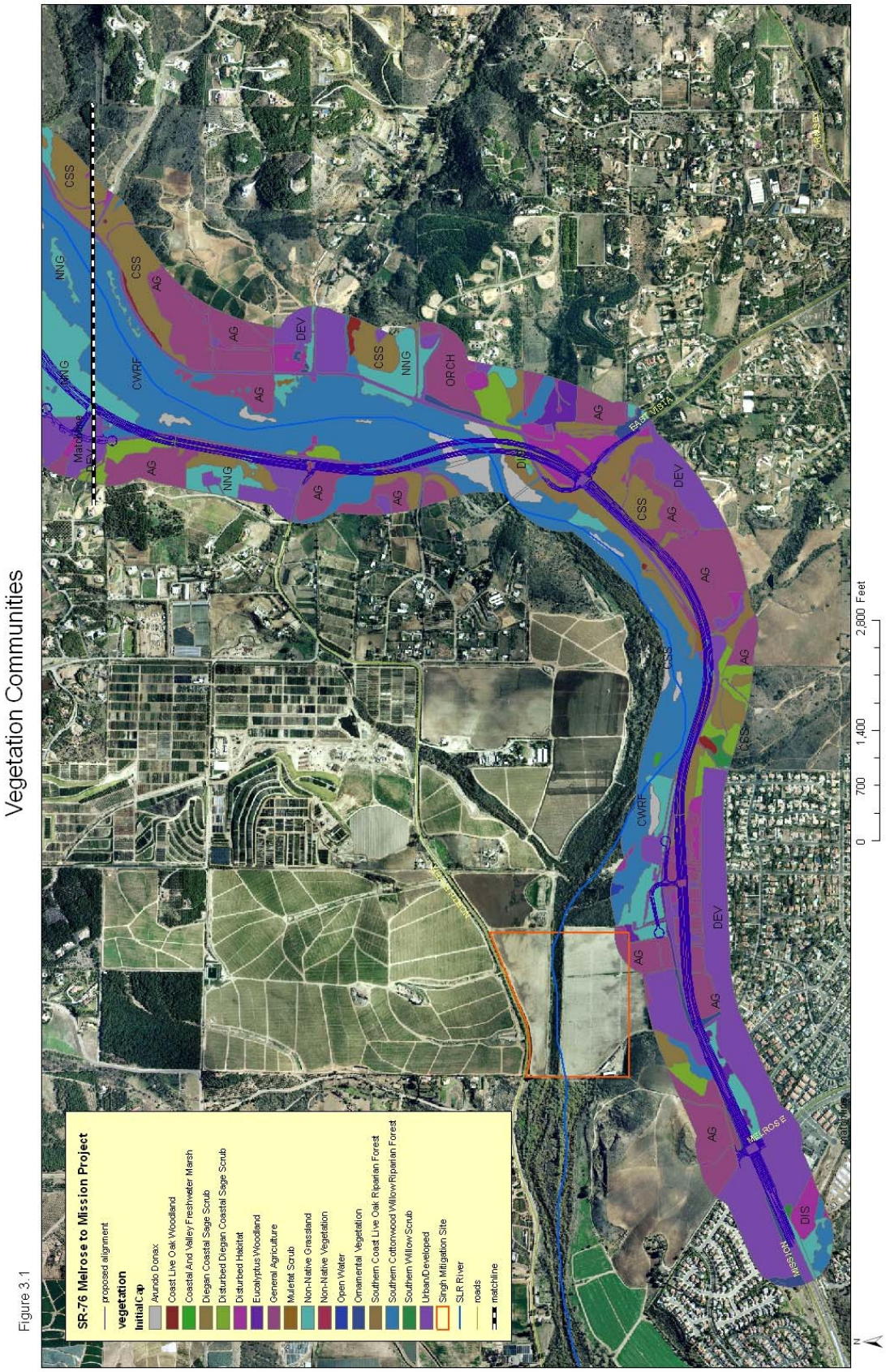

Figure 12. Vegetation Communities

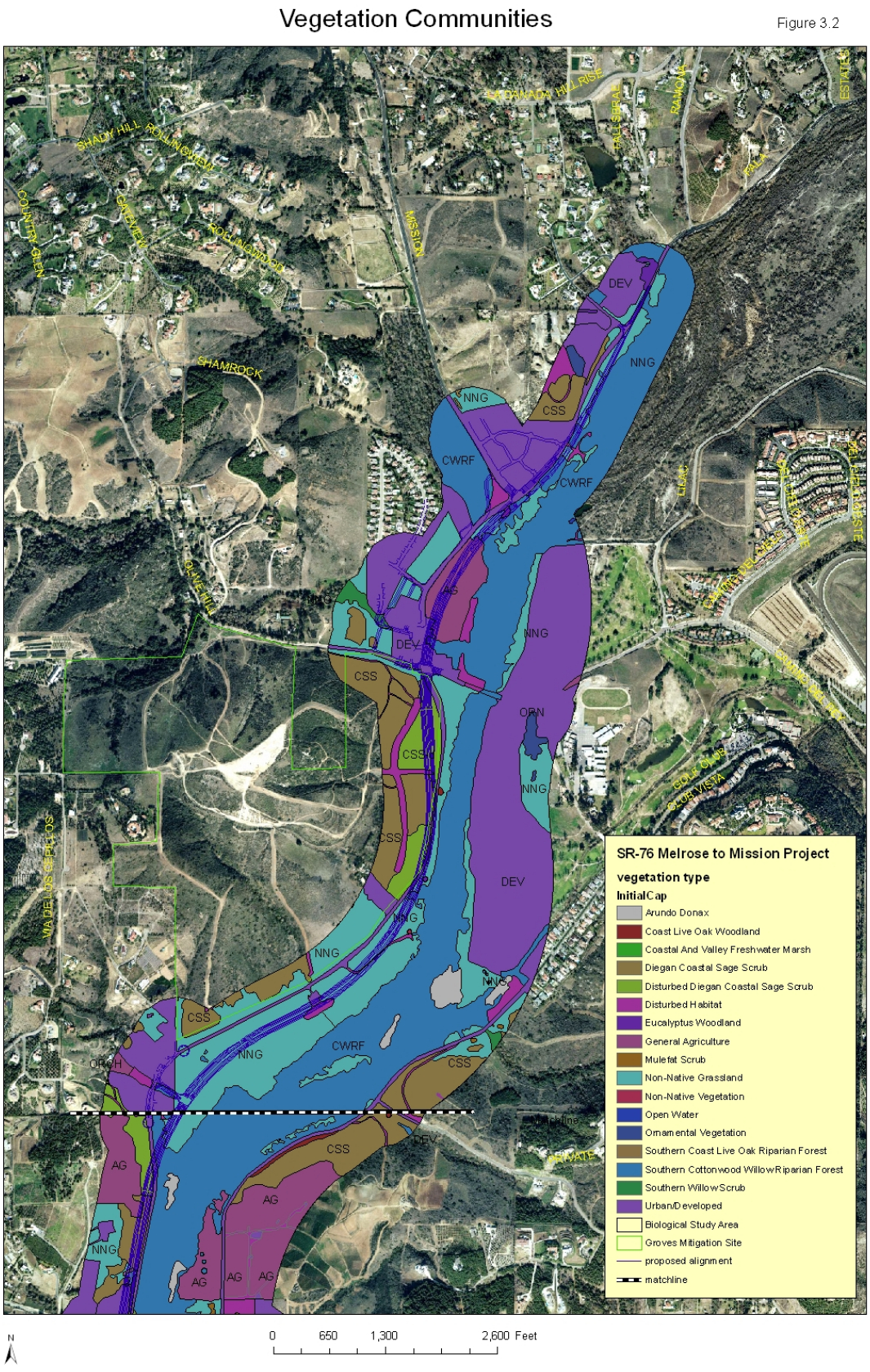

Figure 13. Vegetation Communities

4.3 Species and Critical Habitats within the Project Area

4.3.1 Arroyo Toad

The San Luis Rey River is one of the few remaining occupied drainages that has habitat conditions conducive to supporting a large, robust population. The largest populations of arroyo toads in San Diego County can be found here. Key features distinguishing it from most other occupied drainages are: high stream order (4^{th} to 5^{th} order), low elevation (below 1,000 feet), and broad stream terraces. The only other drainages that support similar conditions, to any extent, are the San Antonio River (Monterey County), San Juan Creek (Orange County), San Mateo Creek (Orange/San Diego Counties), the Santa Margarita River (San Diego/Riverside Counties), Santa Ysabel Creek (San Diego County), and the Sweetwater River (San Diego County) (J. Stephenson, Service, pers. com.). Yet the amount of such high-quality habitat is small on most of these drainages; the San Luis Rey River has the longest stretch of intact high-quality habitat. Its geographic position is also highly significant, lying between the Santa Margarita River and Santa Ysabel Creek. Overland movement between these drainages is still possible and is likely critical to maintaining genetic interchange and metapopulation viability (J. Stephenson, Service, pers. com.). The connection of the San Luis Rey River population to the closest existing population (Santa Margarita River) is slowly being severed by development along the I-15 corridor. Loss of the San Luis Rey population would effectively sever connectivity between key populations to the north (i.e., San Juan, San Mateo, Santa Margarita) and the south (i.e., Santa Ysabel, Sweetwater).

Arroyo toads initially were found in the San Luis Rey River on May 23-24, 1927, when J. R. Slevin collected a large series of specimens on the river 4.8 kilometers (3 miles) west of Bonsall (California Academy of Science 62908-62915, San Francisco). Historically, arroyo toads were noted from near the mouth of the San Luis Rey River (L. M. Klauber, unpubl. field notes, April 2, 1932) to Indian Flats Campground in the Cleveland National Forest (California Academy of Science 173699-173700, San Francisco), a distance of about 32 kilometers (20 miles) and an elevational range of 25 to 1,280 meters (80 to 4,200 feet). Today, arroyo toads have scattered breeding sites within the main river down to the City of Bonsall, and another disjunct breeding site above Lake Henshaw at Barker Valley and Indian Flats Campground (elevation 825 to 1,280 meters [2,700 to 4,200 feet]).

Development has resulted in the direct loss of most of the arroyo toad upland habitat along the lower San Luis Rey River (Pacific Ocean to I-15). The channelization of far eastern portion of the lower San Luis Rey River and associated feeder streams with rip-rap likely precludes usage of the banks for burrowing, protection, and forage as well as make the migration of arroyo toads from the channel into the uplands a difficult if not impossible task. Many factors within the lower San Luis Rey River have also precluded the most likely avenue for arroyo toad movement between the San Luis Rey River and Santa Margarita River (i.e., the coastal plain where the elevation change is small and where, in flood years, the estuaries may have been in close proximity).

Arroyo toads are not currently known to occupy the lower 7.2-mile channelized stretch, which was surveyed in 1996, 1997, and 1998 and occupancy is very unlikely if the river remains channelized. Upstream of the channelized stretch arroyo toad breeding habitat is partially connected to upland burrowing areas, primarily east of I-15. However, the presence of SR-76 immediately adjacent to the river has vast impacts on dispersal and burrowing outside of the floodplain (primarily on the north side of the river). Arroyo toads are currently believed to occupy the majority of the river between Bonsall and Pala. Given the numerous positive surveys from Bonsall to Pala over the past several years, viable populations appear to exist in these areas. However, there has been no rigorous qualitative or quantification evaluation of the population size or trends and that merely observing that a species is present over several years does not, by itself indicate a prognosis for long-term persistence.

No arroyo toads were documented within the BSA during surveys conducted by either AMEC in 2002 or URS in 2003 . Potential arroyo toad breeding habitat may have been greatly reduced in quantity and quality during the 2002 survey period. Because of the extremely dry year, the flow level of the San Luis Rey River was greatly reduced during the normal rainy season and many of the potentially suitable breeding pools previously observed did not form. Many of the areas that had previously been considered good quality breeding habitat for the species were overgrown with dense vegetation.

However, arroyo toads were previously observed breeding in the northern end of the BSA in the mid-1990s up to 2001, in the vicinity of the San Luis Rey Downs Golf and Country Club course, starting about 1,000 ft below the Camino Del Rey Bridge crossing and extending about 1 mile downstream. At the downstream end of the BSA, a breeding population of arroyo toads was documented in 1998. Breeding pools supporting approximately 18 arroyo toads (approximately 14 males and 4 females) were observed at this location. The upland habitat consisting of coastal sage scrub east of Old River Road and north of Dentro de Lomas was also known to support arroyo toads in 1998. This area was completely overgrown with invasive aquatic and riparian plant species during the 2002 surveys, probably due to the lack of scouring action (Figures 14 and 15).

Arroyo toad was detected during protocol surveys in 2006 for the future SR-76 East project between Bonsall and Interstate 15. During those surveys, two arroyo toad sightings were recorded in the western portion of the BSA, while seventy three (73) arroyo toad sightings were documented from Via Monserate to Interstate 15 (EDAW 2006).

Arroyo toads have been observed moving approximately 1.6 kilometers within a stream reach and 1 kilometer away from the stream, into native upland habitats containing friable, sandy soils (Holland 1995, Sweet 1992) or agricultural areas (Griffen *et al.* 1999). Griffin (1999) reported a female arroyo toad traveling more than 300 meters perpendicular from a stream and Holland (1998) found arroyo toads 1.08 kilometers from a water course. Therefore, it is possible that arroyo toads move between the San Luis Rey River and the uplands within the project area.

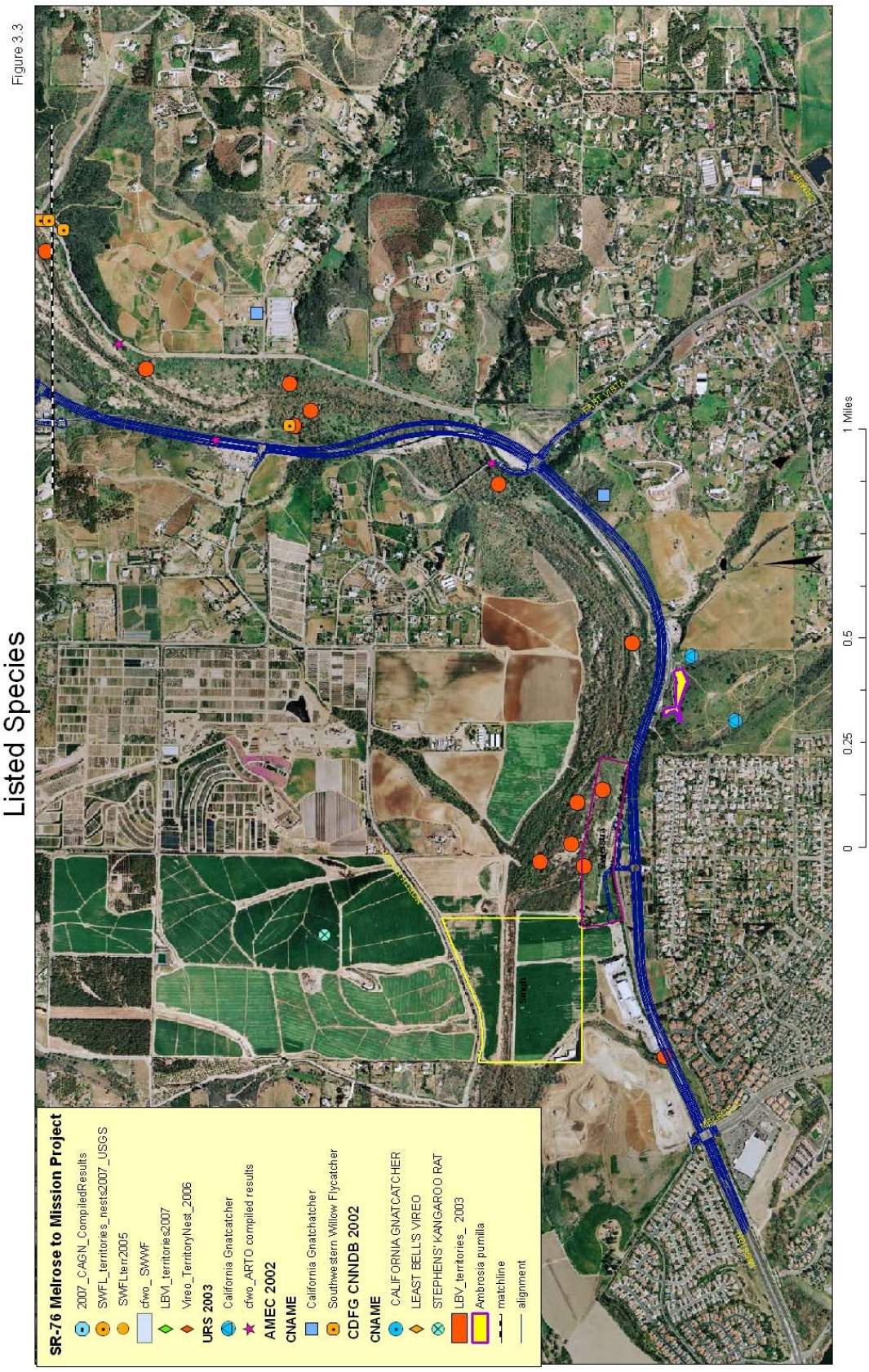

Figure 14. Listed Species

Listed Species

Figure 3.4

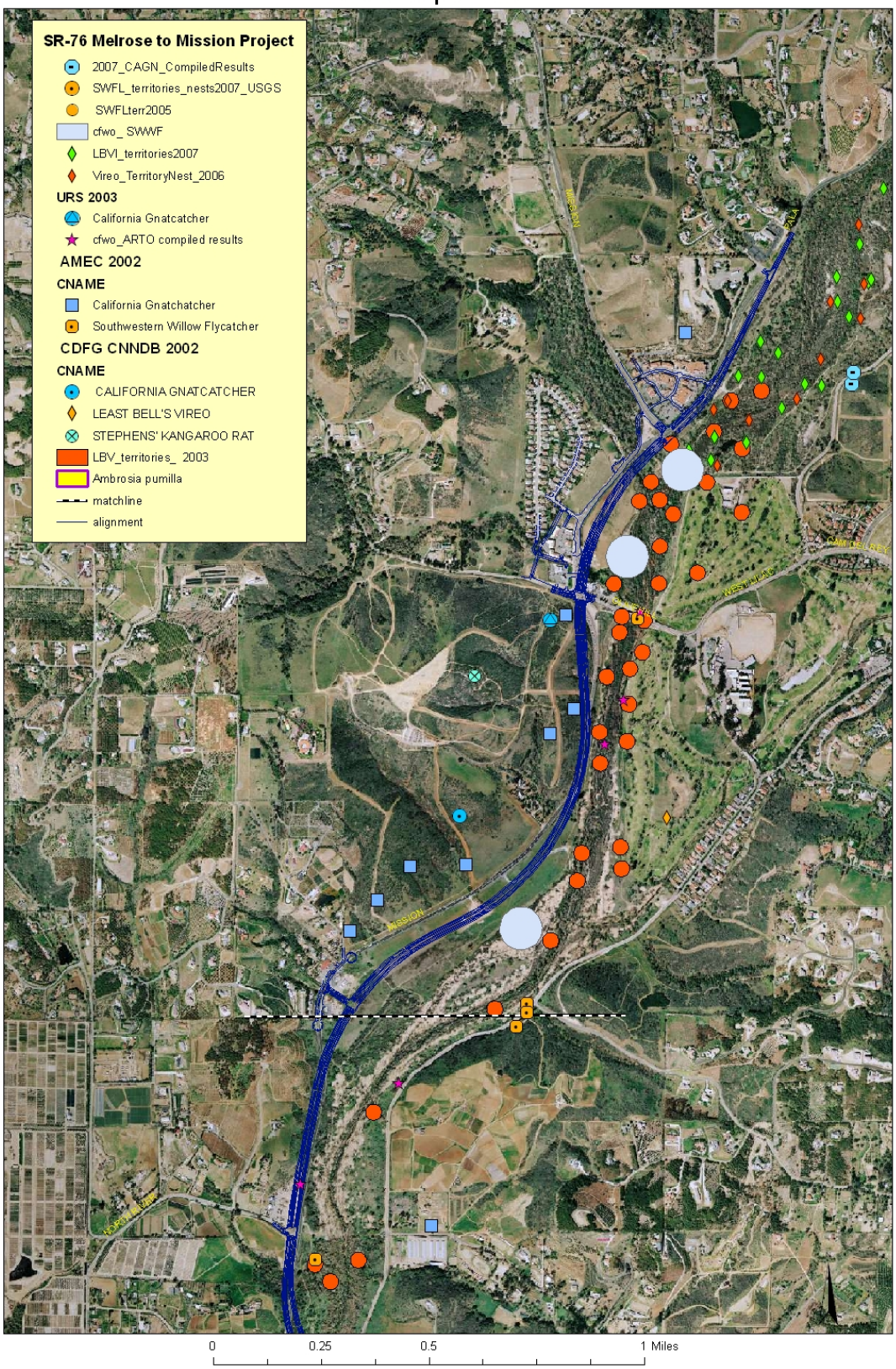

Figure 15. Listed Species

The project area occurs in excluded arroyo toad critical habitat Unit 14. Essential lands in Unit 14 include portions of the San Luis Rey River and adjacent upland areas below the La Jolla Indian Reservation, as well as sections of Pala and Keys Creeks in the lower and middle San Luis Rey River Basin. The unit encompasses approximately 8,669 ac (3,508 ha), of which 84 percent is private land, 10 percent is on the Pala Indian Reservation, and 5 percent is on the Rincon Indian Reservation. Approximately 30 mi (48 km) of the San Luis Rey River from the western edge of the La Jolla Indian Reservation downstream to the confluence with Guajome Creek near the City of Oceanside are designated as critical habitat. Unit 14 also includes approximately 3.4 mi (5.5 km) of Pala Creek and 1.7 mi (2.7 km) of Keys Creek upstream from their confluence with the San Luis Rey River. Unit 14 contains an indispensable arroyo toad population in the San Luis Rey River Basin. This unit was known to be occupied at the time of listing in 1994. This long, low elevation [all below 1,000 ft (305 m) in elevation] unit is situated in a broad, flat valley with a low-gradient river that supports all the primary constituent elements, such as shallow pools for breeding and sandy substrates in adjacent upland terraces for foraging, burrowing, and aestivating. This unit is necessary for the conservation of the arroyo toad because it supports one of the largest contiguous river reaches that is occupied by the species and has the ability to support a viable population. Special management considerations that are required in this unit include addressing issues regarding dams and water diversions in the upper end of the unit and minimizing impacts from intensive urbanization, agriculture, exotic predators, and invasive plant species.

4.3.2 Least Bell's Vireo

In the early 1900's, and even as late as the 1940's, the vireo was considered a common bird in the riparian plant communities of California. By 1984, cowbird parasitism and habitat destruction had reduced vireo numbers in the lower San Luis Rey River to approximately eight breeding pairs. The virtual elimination of cowbird parasitism since 1991 has played a key role in the population increase in the lower San Luis Rey River, which numbered 117 territories and 110 breeding pairs in 2003[2]. Another factor in increasing the vireo population had been the regrowth of riparian vegetation primarily within the Corps flood control channel area, which has subsequently been impacted by the removal of habitat to retain the functionality of the levee system. The population of vireo in the lower San Luis Rey River (Table 9) extends upstream of the flood control channel where 130 male vireos were observed in 2002, with at least 49 confirmed breeding pairs (Peterson *et al.* 2002). The lower San Luis Rey River, with a total of 159-245 vireo pairs, now represents the third largest vireo population throughout the species range within the United States (Marine Corps Base Camp Pendleton and the Prado Basin are the largest two populations).

Monitoring of the vireo (and flycatcher) in the lower San Luis Rey River has occurred since the 1980's. Vireo territory sizes have been reported ranging from 0.5 to 7 acres (Service 1998). Within the channelized stretch of the San Luis Rey, territory sizes ranged from 0.59 - 5.79 acres with an average of 1.9. Productivity of vireos had been high in the channelized stretch. From

[2] Cowbirds still remain a significant threat in the area with an average of 500-600 cowbirds captured each year in the lower San Luis Rey.

1989 to 2003 the number of fledglings per pair ranged from 1.7 to 3.3, with an average of 2.4. In the channelized stretch, vireos had an average of 2.6 fledglings per pair whereas upstream of the channelized stretch, vireos had an average of 1.8 fledglings per pair. This represents a 25 percent difference in productivity and is likely due, in large part, to the Corps' ongoing cowbird trapping and nest monitoring.

Table 9. Least Bell's vireo territory numbers for the San Luis Rey

	Number of Territories														
Location	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
I5-College	11	9	26	31	54	52	50	70	69	86	80		82	117	
College-I15	43	39	59	76	99	114	90				137	132	130		

The upper San Luis Rey River does not have the same extensive monitoring records as the lower and is not currently available for analysis. Vireo have been reported by the Forest Service on the upper San Luis Rey River, however the individuals are believed to have been migrants without evidence of regular breeding in the area.

The majority of suitable habitat within the BSA is occupied (Figures 14 and 15). A total of 28 to 29 locations within the BSA were occupied by least Bell's vireo in 2002 (USGS 2005 and AMEC 2004) and a total of 44 territories (and 242 point locations) were identified within the BSA during the 2003 surveys (URS 2004).

The project site occurs within the San Luis Rey Area of designated critical habitat for the vireo (Figure 16). Approximately 6,000 acres of critical habitat exist on the San Luis Rey River. Critical habitat is designated from I-5 to Pala Road.

4.3.3 Southwestern Willow Flycatcher

Nearly the entire San Luis Rey River provides foraging, dispersal, and migratory habitat. Flycatchers were not observed nesting in the lower San Luis Rey River until 1999; however, flycatchers are difficult to identify except during a small window in the spring when they vocalize. Therefore they may have been present in the lower San Luis Rey River, but unobserved prior to 1999.

Surveys for the Rosemary Mountain Quarry project during 2003 and 2004 detected a trio (polygynous pair) of flycatchers, nine individual flycatchers, and one pair of flycatchers within the portion of the San Luis Rey River that is directly south of Rosemary's Mountain.

Surveys related to the San Luis Rey Flood Control project documented, between 2000 and 2004, a growing population of flycatchers. Starting in 2000 there were 3 territories within the lower San Luis Rey River. By 2003 between 10 and 13 territories had been documented from within the channelized stretch of the San Luis Rey River to approximately two miles upstream of I-15. This population is separate from the population of flycatchers near Lake Henshaw. The lower San Luis Rey River flycatcher locations are spread out along the river and are associated with permanent water sources and large wide mature riparian vegetation near Whalen Lake and Guajome Lake.

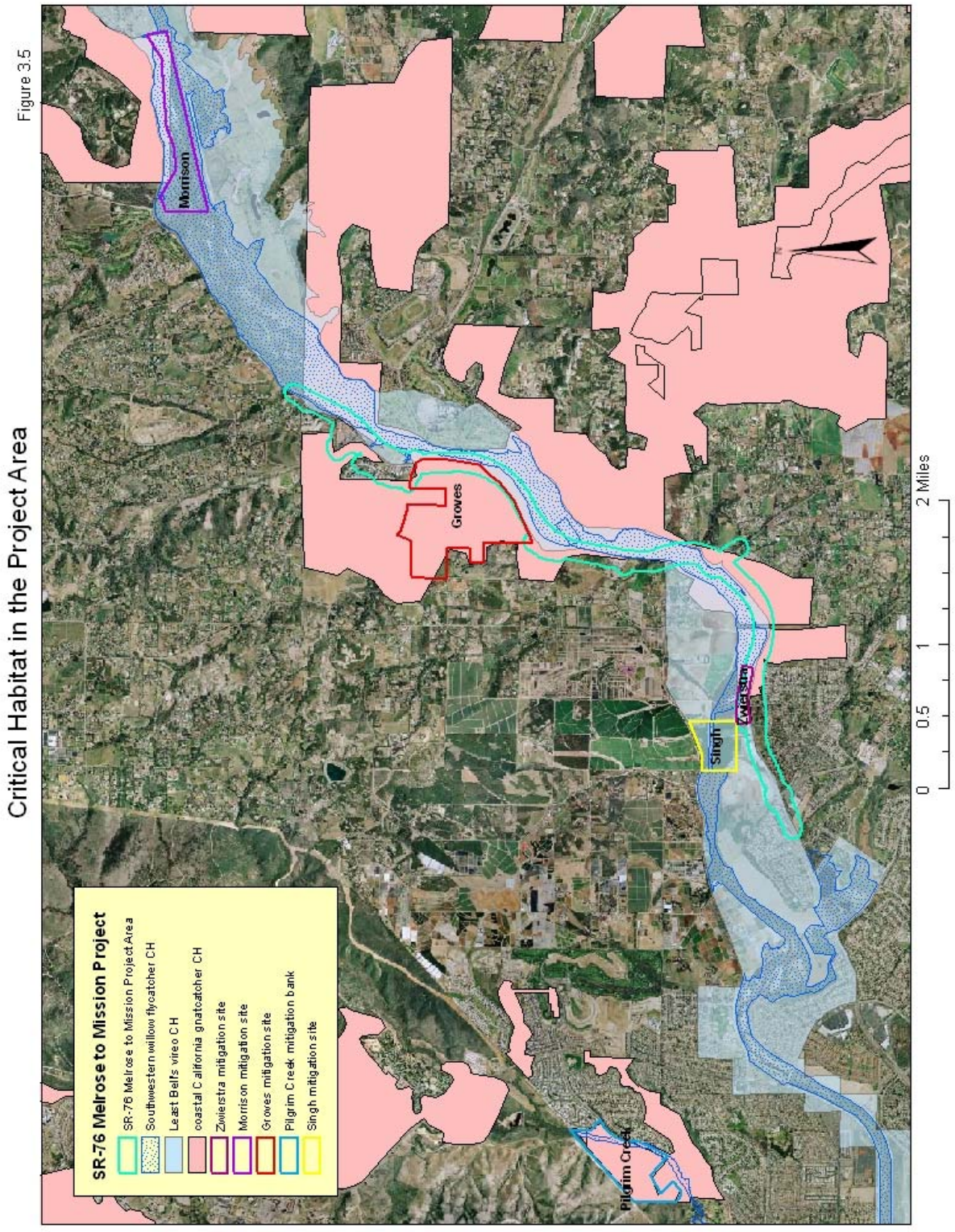

Figure 16. Critical Habitat in the Project Area

There is a very large and successful population of flycatcher near the Forest Service's San Luis Rey Picnic Area. The area is located along the San Luis Rey River and SR-76 immediately downstream of Lake Henshaw. Historically, between 40 and 50 pairs occupy this stretch with approximately 12 pairs on Forest Service land. One focused survey along the Cleveland National Forest stretch in 2008, located numerous flycatcher, including one nest (Roblek, Service, unpublished data). This population is the only known population of flycatcher on the Cleveland National Forest. Cowbird trapping has occurred in this area without evidence that the trapping effort was benefiting the flycatcher based on the lack of nest-parasitism with and without trapping. A survey of cowbirds on the adjacent Lusardi grazing allotment found no evidence of cowbird foraging. The same stretch of river has been designated critical habitat and is comprised of approximately 22 acres.

Flycatchers were documented at a total of 17 localities within the BSA during the protocol surveys conducted by AMEC in 2002 and URS in 2003 (Figure15 and 16). Five (5) of the sightings most likely represented migrants, one sighting was a pair, and the remaining sighting was a single male. The pair observed during the breeding season was located along the San Luis Rey River in the northern portion of the BSA. In 2003, URS documented the presence of migrating, solitary flycatchers at three localities within the BSA. The habitat was not occupied for more than a single survey (URS 2004).

The project site occurs within the San Diego Management Unit of designated critical habitat for the flycatcher. This management unit encompasses approximately 4,804 acres (1944 ha) that contains essential features for breeding, non breeding, territorial, migrating, and dispersing southwestern willow flycatchers and helps provide metapopulation stability, population growth, gene flow, connectivity, and protection against catastrophic losses. A total of eight flycatcher breeding sites (seven on the San Luis Rey River and one on Pilgrim Creek) are known to occur within this Unit (Service 2005b). Breeding sites have been detected since 1994. Durst *et al*. (2005) reported 67 territories from the San Luis Rey River drainage with a single site on the upper San Luis Rey holding 44 territories.

4.3.4 Coastal California Gnatcatcher

The proposed project area contains areas of undisturbed native upland habitat areas, including areas suitable for the gnatcatcher (i.e., coastal sage scrub). The majority of the BSA, 909.57 acres, is located within designated critical habitat for the gnatcatcher, Units 3 and 5 (Service 2007). These lands consist of designated core gnatcatcher populations and sage scrub habitats identified as high or moderate value.

Unit 3 encompasses approximately 17,325 ac (7,011 ha) within the MHCP planning area in northwestern San Diego County. Included are lands within the cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista. This unit provides for connectivity and genetic interchange among core populations, contains large blocks of high-quality habitat capable of supporting persistent populations of gnatcatchers, and contains the last significant gnatcatcher populations remaining south of MCB Camp Pendleton abutting the coast.

Unit 5 encompasses approximately 34,705 ac (14,045 ha) within the planning area for the NCMSCP. Lands designated/proposed for critical habitat within this unit contain several core gnatcatcher populations and intervening linkage areas of sage scrub. This unit constitutes the primary inland linkage along the I–15 corridor between San Diego populations and those in southwestern Riverside County (Unit 10).

Gnatcatchers were documented at 10 locations within the BSA during the protocol surveys conducted by AMEC in 2002. One gnatcatcher pair was located south of SR-76 and southwest of the creek along East Vista Way, on the northern and western facing slopes. One pair of gnatcatcher, with one begging juvenile, was observed in the northern portion of the BSA on a hill west of SR-76. The juvenile was not detected during subsequent visits to this survey patch. Three separate pairs of gnatcatcher were observed on the western side of SR-76, near the northern portion of the BSA. In addition, gnatcatcher was documented in this same location in 2002 (Service unpublished data). Four pairs of gnatcatchers were observed northwest of SR-76, near the northern-central portion of the BSA (AMEC 2004). One pair of gnatcatchers was observed east of SR-76, in the central portion of the BSA. One pair of gnatcatchers was also detected within the BSA during the protocol surveys conducted by URS in 2003 and is presumed to be one of the same pairs observed by AMEC in 2002. The pair was detected approximately 300 ft west of the intersection of SR-76 and Camino Del Rey/Olive Hill Road, using approximately 6 ac of coastal sage scrub habitat. Additional gnatcatcher localities were observed in the BSA, south of SR-76 and southwest of East Vista Way, during other surveys related to the project.

4.3.5 San Diego Ambrosia

The northernmost known natural occurrences of ambrosia in San Diego County occur along the San Luis Rey River. Natural occurrences along the project corridor are known at Jeffries Ranch (150-200 plants) and the Groves properties. There are two additional occurrences, but are unnatural as they were translocated as a result of widening SR-76 and constructing the Bonsall Bridge. One population was planted along Pilgrim Creek and the other at the Marron Mitigation site.

In 2005, approximately 200 one-gallon ambrosia plants were planted at the Marron Mitigation site. The transplanted ambrosia appear to be proliferating on-site (Roblek *personal observation*, Service 2007). Surveys in 2008 indicated there the ambrosia now covers approximately 1.11 acres.

In addition, there are plants currently being held in a nursery from impacts during a San Diego Gas and Electric project along the San Luis Rey River.

4.4 Proposed Off-site Compensation Locations

The proposed compensation sites have been identified in regional planning efforts as important to the conservation of the aforementioned species and to the build out of the preserve within the NCMSCP and the City of Oceanside Subarea Plan within the MHCP area (Figure 17).

4.4.1 The Groves

The Groves property consists of total of 286 acres located at the southwest corner of SR-76 and Olive Hill Road in the community of Bonsall (Figures 18 and 19). A majority of the area contains designated critical habitat for gnatcatcher. Numerous gnatcatchers have been recorded on site during formal and informal surveys. There are no significant data available to estimate the size of this metapopulation. Approximately, 180 acres of coastal sage scrub occurs on site with about 82 acres categorized as disturbed. The site is occupied by gnatcatcher and ambrosia. The property also consists of approximately 11 acres of coast live oak woodland, and 50 acres of non-native grassland. The Groves is located in close proximity to the San Luis Rey River, which supports a significant arroyo toad population. Although the Groves property does not provide breeding habitat for the arroyo toad, it does contain upland habitat appropriate for burrowing, dispersing and foraging. Access control has been built at this site.

4.4.2 Morrison Property

The Morrison property, totaling about 121 acres, is located southeast of Gird Road and SR-76 in Bonsall (Figures 20-23). The San Luis Rey River crosses the southern portion of the property. Both arroyo toad and vireo have been documented on site. The property has approximately 2.8 acres of freshwater marsh, 38.7 acres riparian forest, 74 acres of riparian scrub, 3.6 acres of disturbed habitat, and 5.3 acres of non-native grassland. Due to the presence of riparian habitat, the flycatcher potentially may use the site.

4.4.3 Singh Property

The 60-acre Singh property is located southeast of Sleeping Indian Road and North River Road and is bisected by the San Luis Rey River in the northeastern area of the city of Oceanside (Figure 24 and 25). The property is currently used for growing row crops (tomatoes). No listed species are known to occur on this site. Future mitigation plans would dictate creation and restoration of the site.

4.4.4 Zweirstra Property

The 19.38-acre Zwierstra property is located along the north side of the SR-76 Melrose to Mission project between Melrose and East Vista Way. Its northwestern corner abuts the Singh property's southeastern corner. Four acres are currently riparian forest with the remainder in use as a dairy farm and residence. Vireo and arroyo toad were historically documented within the stretch of the river adjacent to this property.

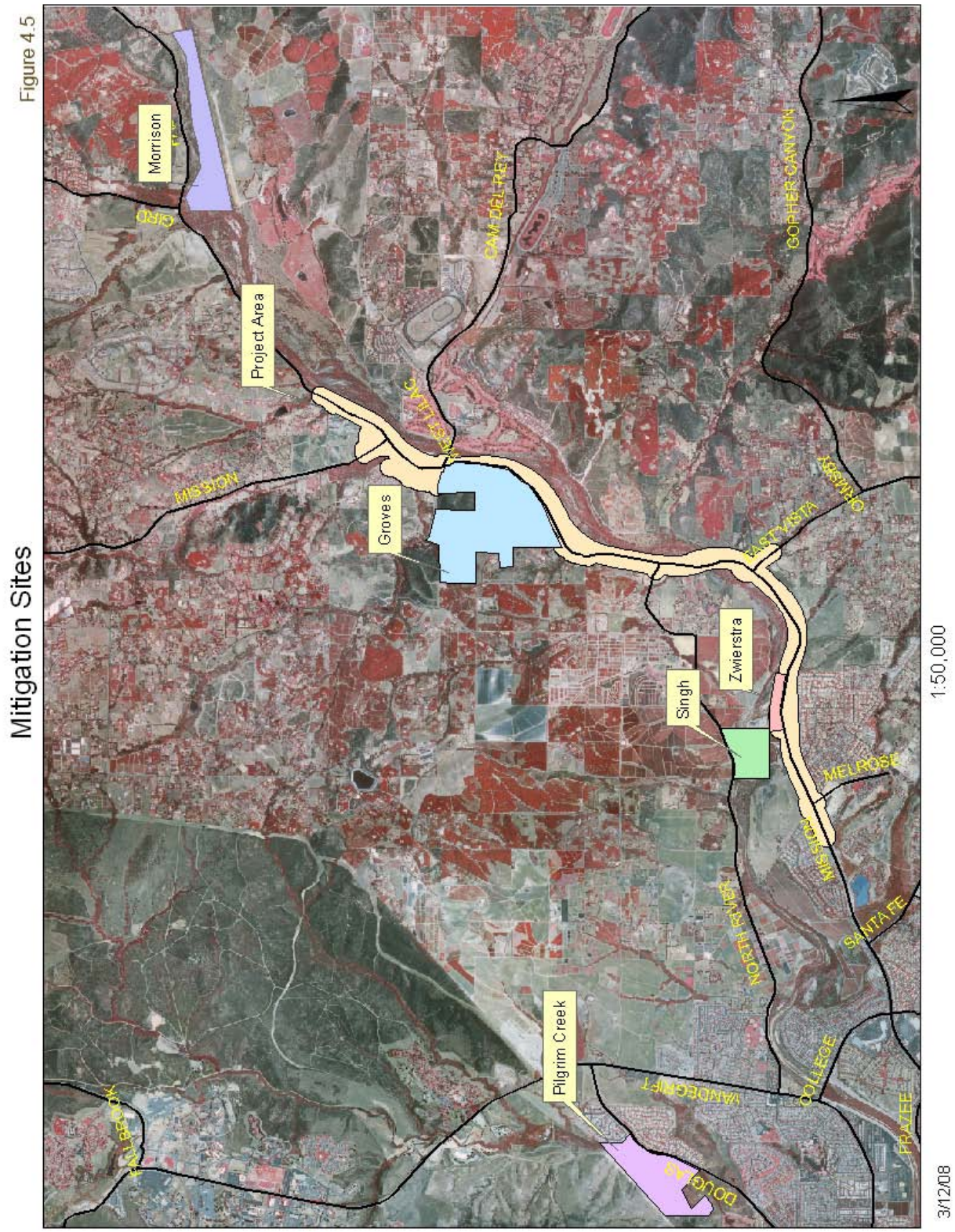

Figure 17. Mitigation Sites

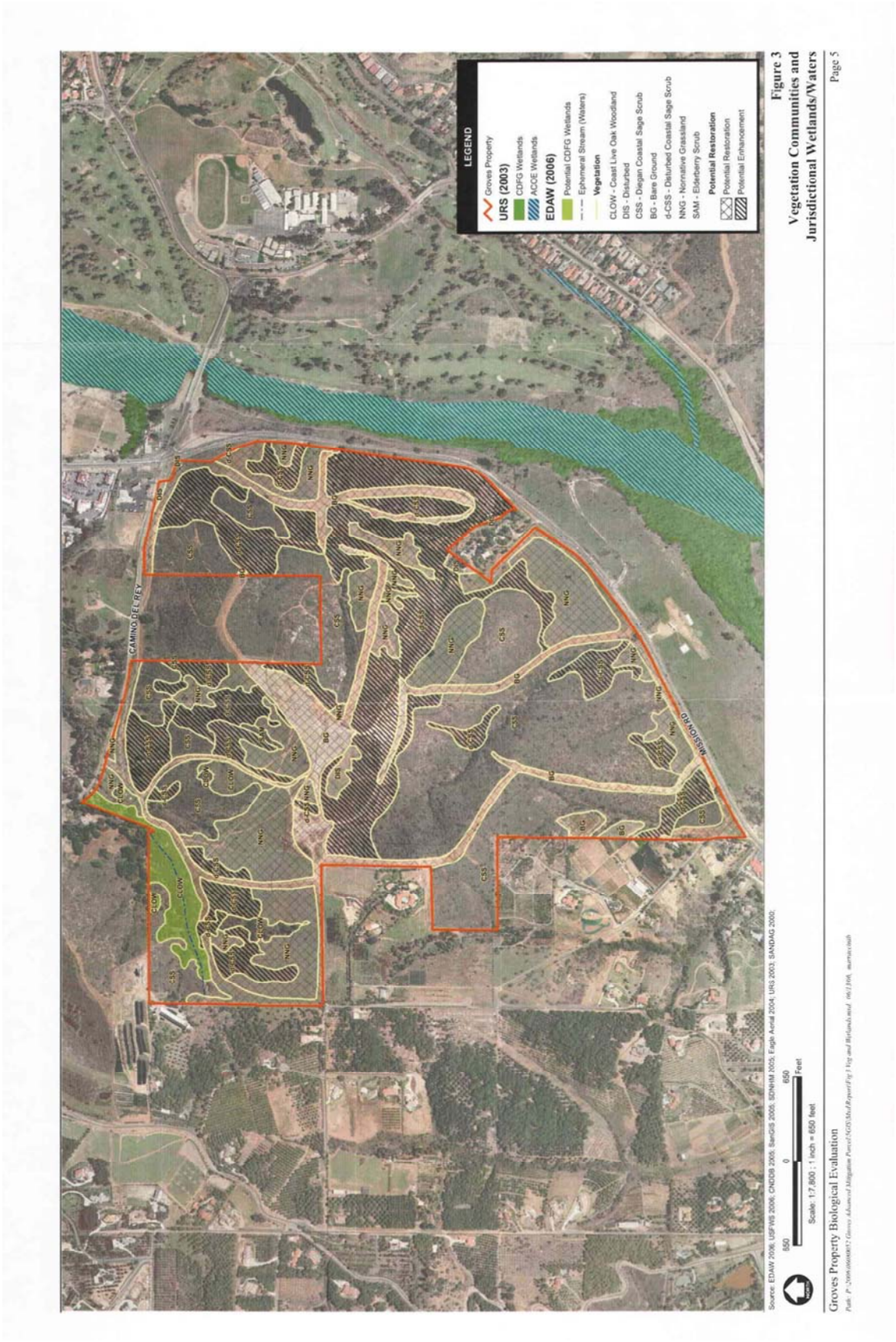

Figure 18. The Groves Vegetation

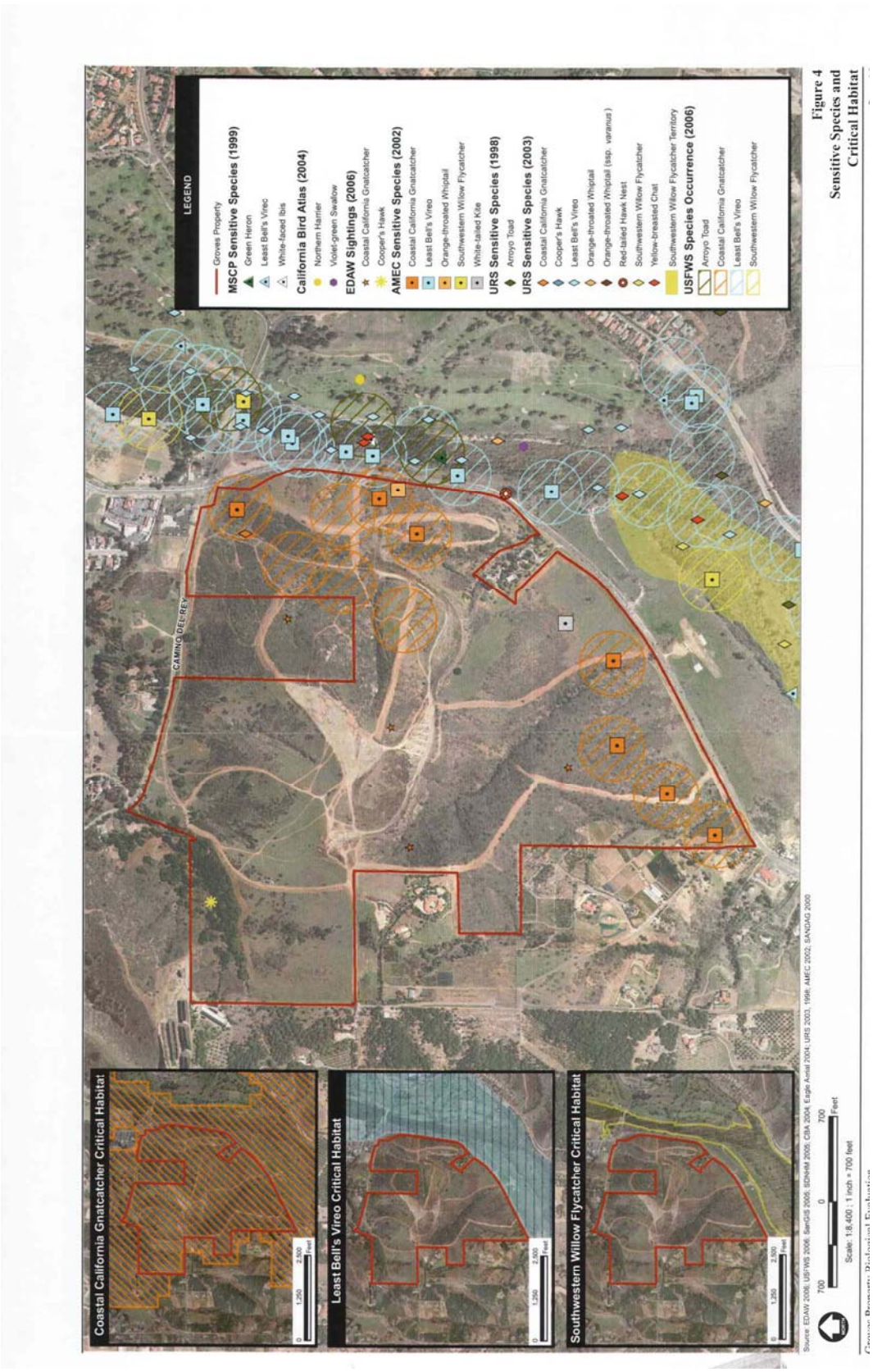

Figure 19. The Groves Sensitive Species and Critical Habitat

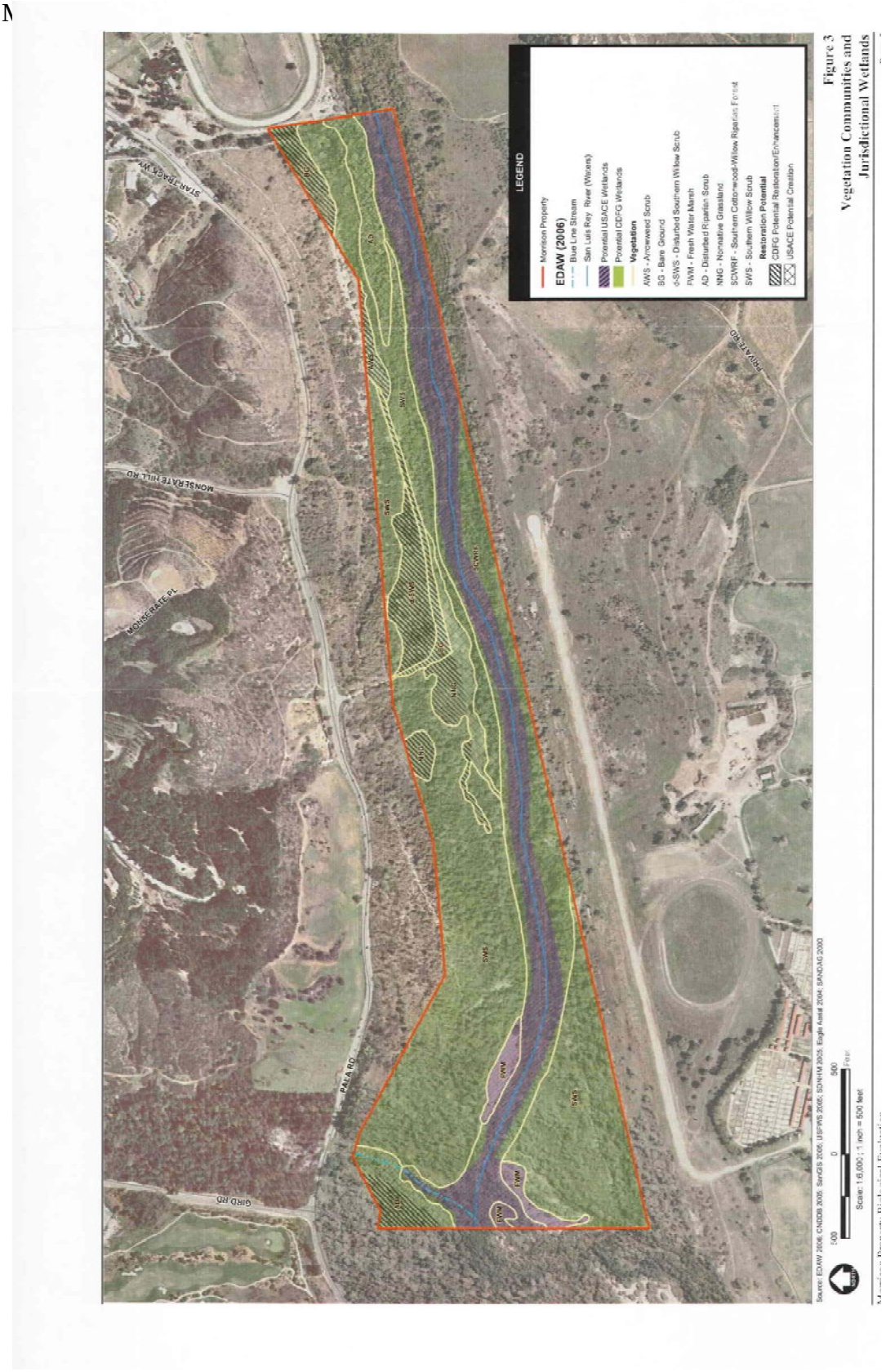

Figure 20. Morrison Vegetation

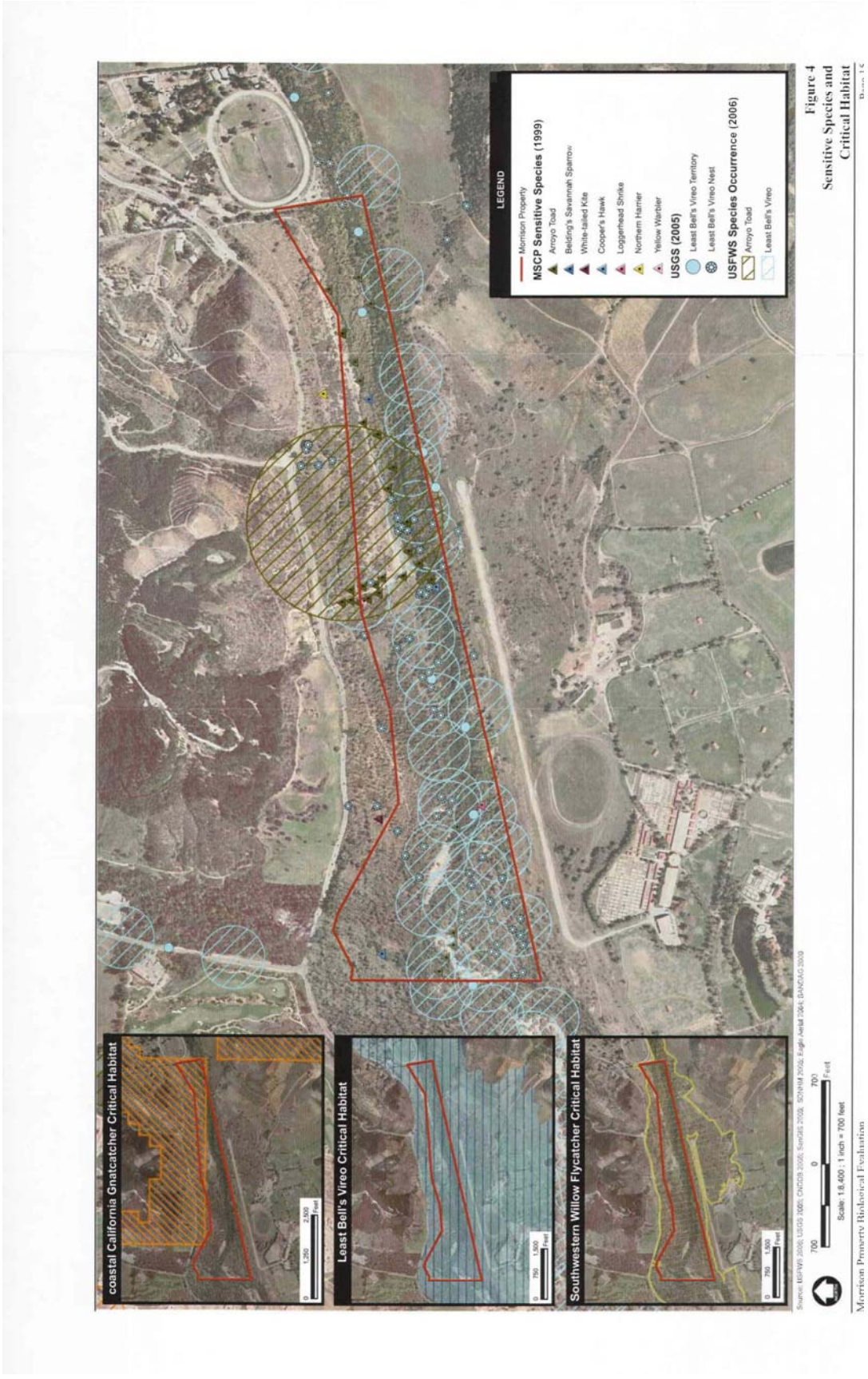

Figure 21. Morrison Sensitive Species and Critical Habitat

Figure 22. Morrison Exotic Species Removal and Planting Areas

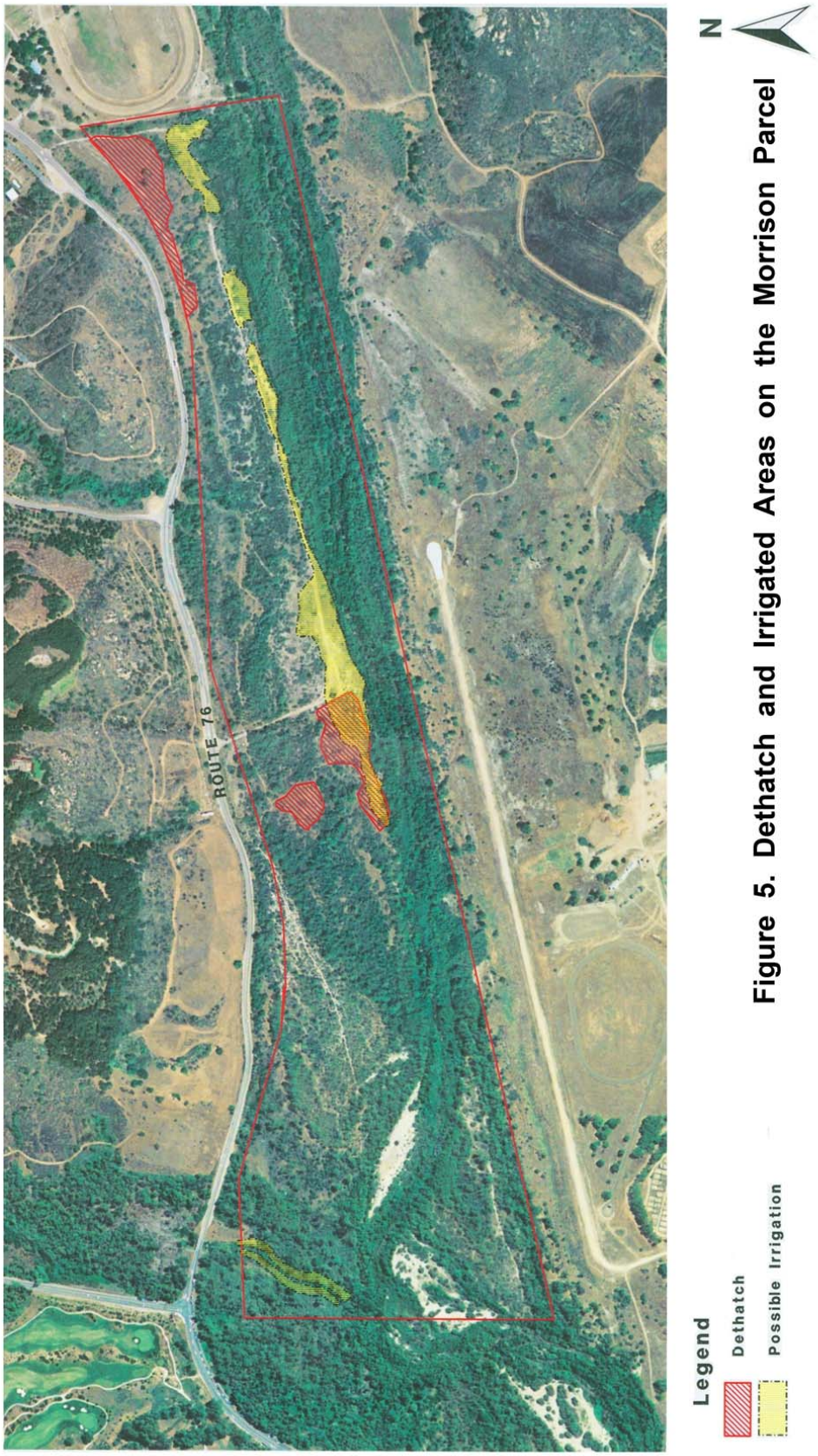

Figure 23. Morrison Proposed Dethatch and Irrigated Areas

Figure 24. Singh Existing Vegetation

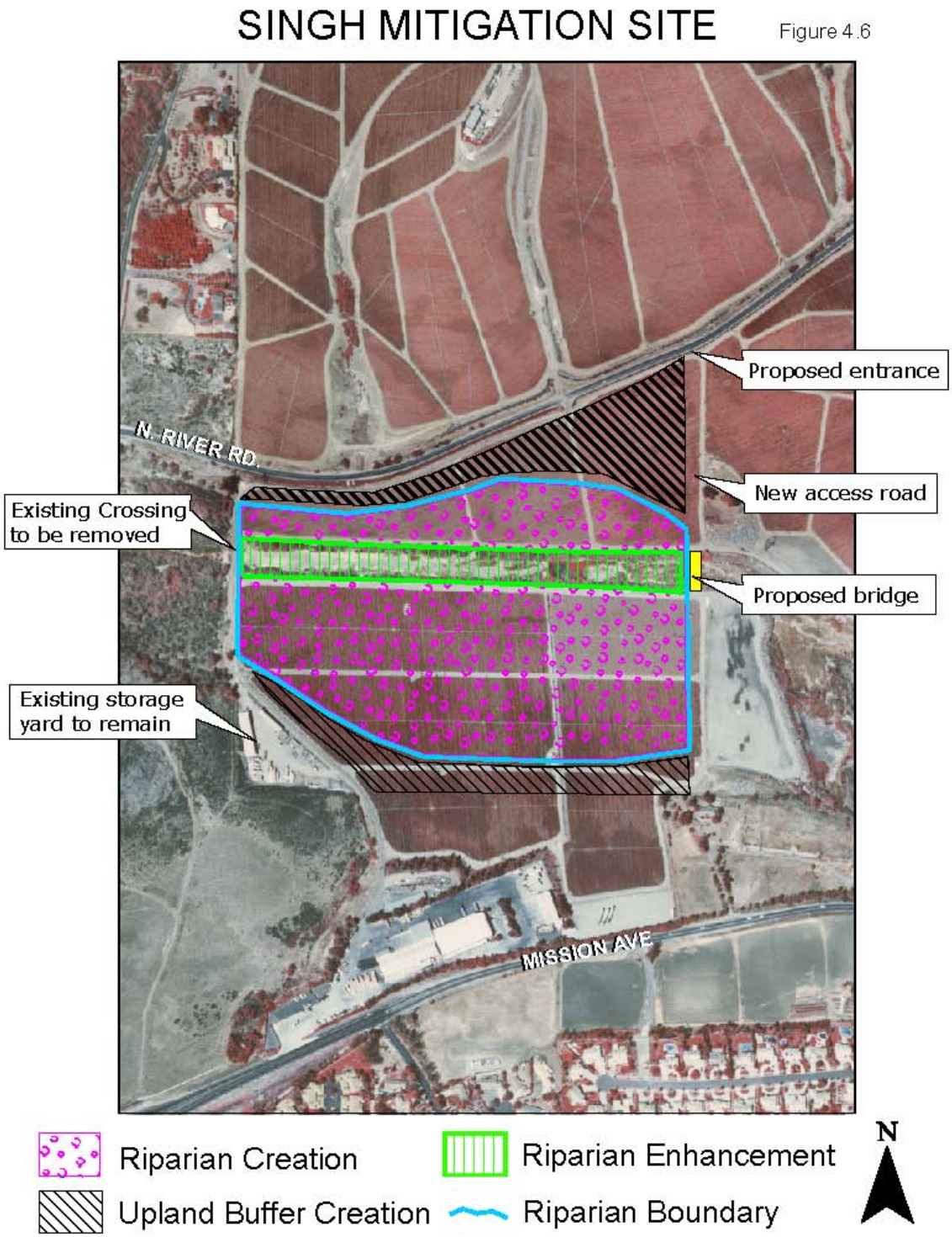

Figure 25. Singh Proposed Creation/Enhancement

4.4.5 Pilgrim Creek Mitigation Bank

The Pilgrim Creek Mitigation Site is located along Pilgrim Creek, a tributary to the San Luis Rey River. The site is bordered to the west by Marine Corps Base Camp Pendleton, to the south by a golf course, and on the remaining sides by Douglas Drive and residential developments. The stretch of Pilgrim Creek on the site supports approximately 9.8 acres of willow-dominated riparian habitat along a narrow channel. Coastal sage scrub, including 34.6 acres of restored habitat, covers the slopes bordering the site to the west, and the center of the site supports riparian vegetation planted in 1996 within a 49.8 acre restoration area, as well as 1.5 acres of freshwater marsh. An additional small cell of planted riparian vegetation lies between Pilgrim Creek and Douglas Drive on the east side of the creek. This bank has 4.9 acres of available wetland mitigation credit.

4.4.6 Marron Mitigation Site

The 10.5-acre Marron Mitigation Site is located north and parallel to SR-76 from Post Mile 8.9 to Post Mile 9.2 (Figures 26 and 27). The San Luis Rey River runs parallel to the site directly north. The property is bordered to the north and northeast by agricultural and to the west by the Feck (City of Oceanside) Mitigation Site. It was selected as off-site mitigation for the San Mateo Creek Bridge Emergency Repair Project to provide habitat for the vireo and arroyo toad. In addition to the riparian and coastal sage scrub created on site, ambrosia was planted. Approximately 200, 1-gallon container plants that were salvaged from the SR-76 West extension were planted out on February 15, 2005. The ambrosia has expanded rapidly and now covers approximately 438,430 square feet (1.11 acre).

4.5 Projects and Land Uses Affecting Species and Critical Habitats

A long list of historical projects and land uses along the San Luis Rey River, and the adjacent uplands, have degraded vireo, flycatcher, arroyo toad, gnatcatcher, and ambrosia habitat in this area. In addition, there is a long history of illegal fills and activities within the San Luis Rey River. Some of these have resulted in enforcement actions by the U.S. Army Corps of Engineers (Corps) and the Environmental Protection Agency, but many unauthorized activities go undetected. These types of activities all have the potential to impact the vireo, flycatcher, gnatcatcher, and toad either directly through mortality or indirectly due to loss or degradation of habitat.

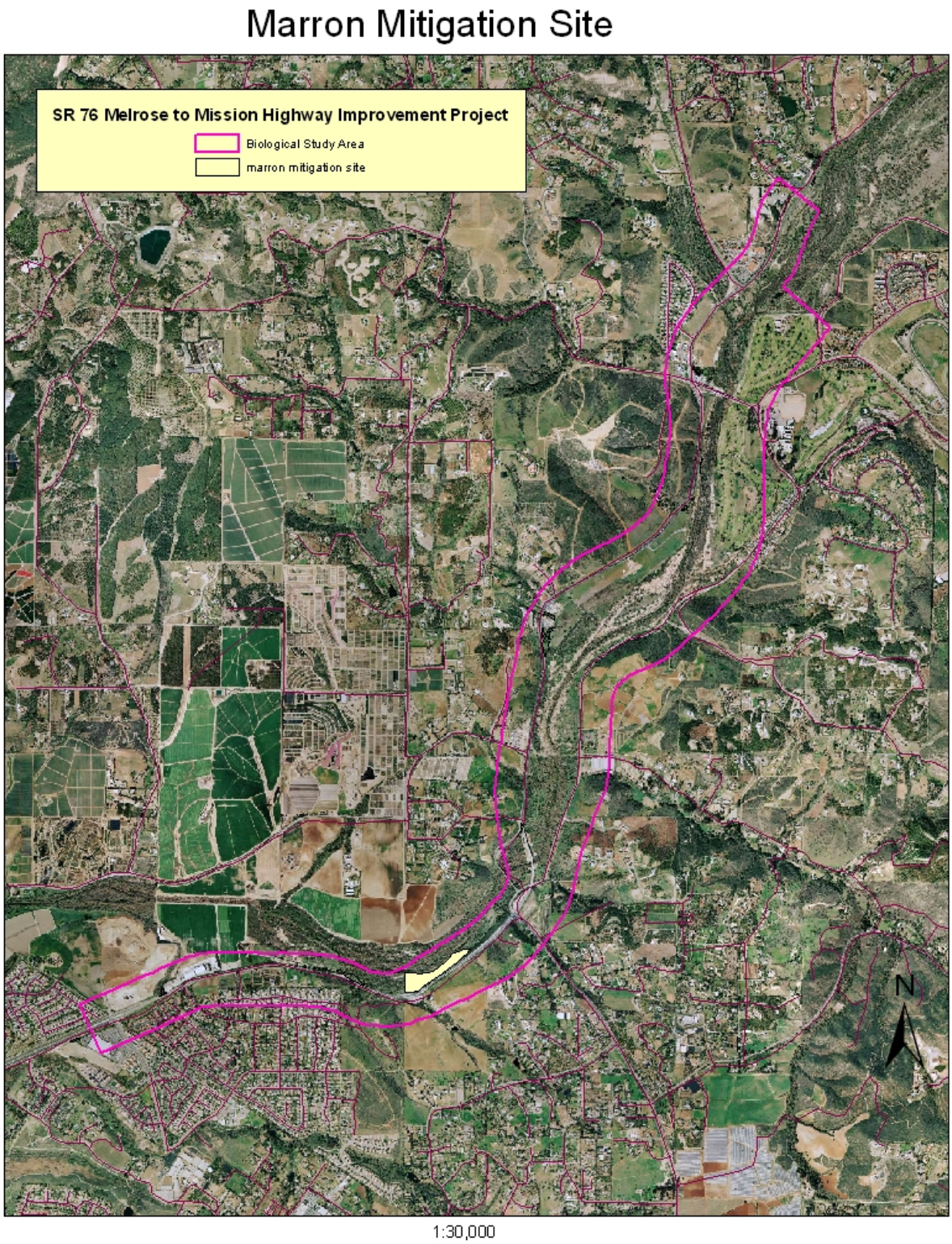

Figure 26. Marron Mitigation Site Location

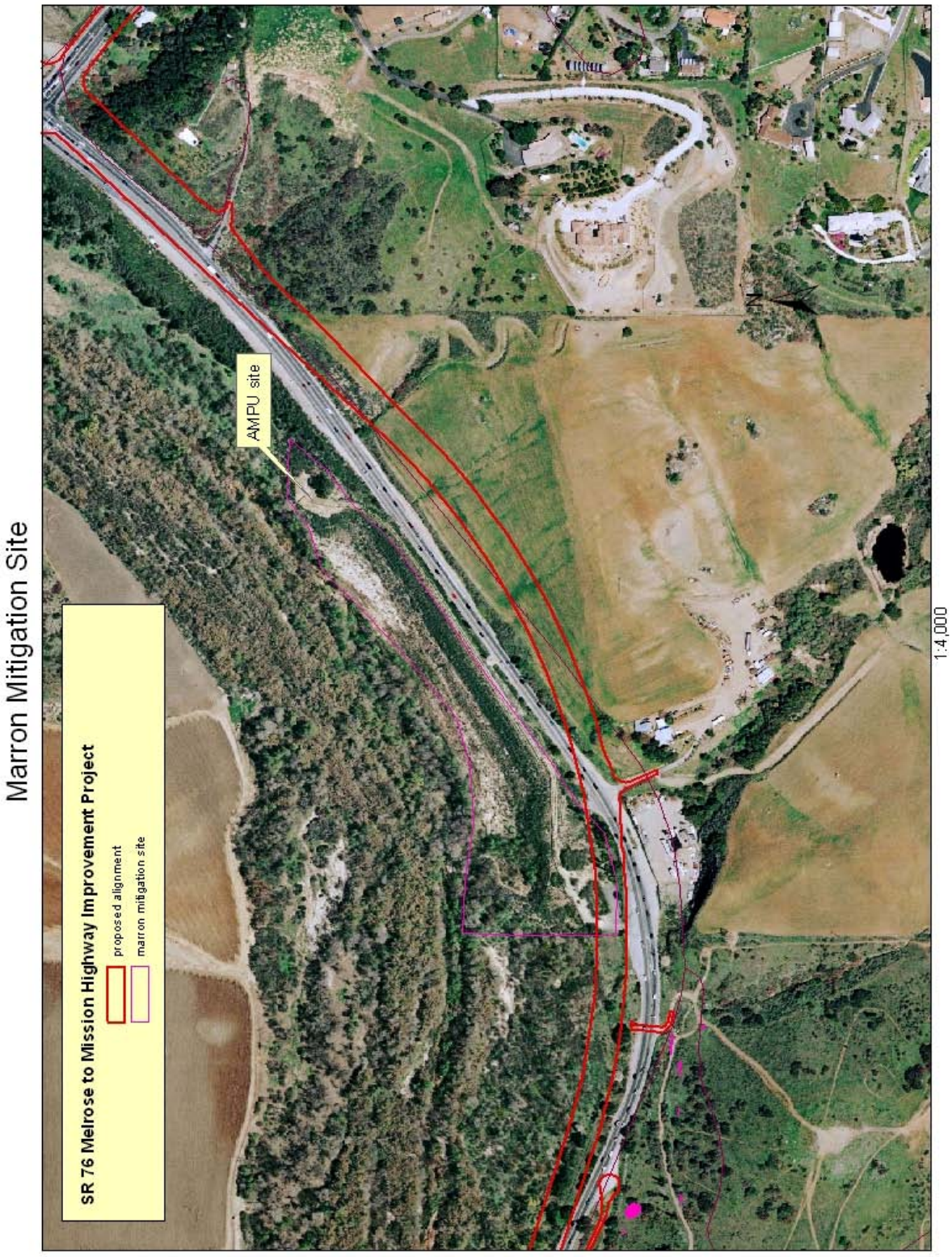

Figure 27. Marron *Ambrosia pumila* Location

4.5.1 Geotechnical Borings along State Route 76

On December 20, 2007, the Service consulted informally on geotechnical borings at four locations along SR-76 in preparation for a new San Luis Rey River Bridge as part of the SR-76 Melrose Drive to South Mission Highway Improvement project. During this informal consultation, the Service determined that the proposed boring activity would have no effect on the arroyo toad; however, the proposed activity may affect, but is not likely to adversely affect, the flycatcher, gnatcatcher, and vireo. The proposed boring sites are located within designated flycatcher, gnatcatcher, and vireo critical habitat; however, through implementation of the avoidance and minimization measures, the proposed activity will not adversely affect designated critical habitat. On January 18, 2008, the Service issued a biological opinion for seven additional geotechnical boring locations along SR-76 in preparation for a new San Luis Rey River Bridge on arroyo toad, flycatcher, gnatcatcher, and vireo. The Service determined that, provided the description of the proposed action and conservation measures are implemented, the proposed project may affect, but is not likely to adversely affect the flycatcher and vireo, and will have no effect on the gnatcatcher. Take was authorized for no more than five (5) arroyo toad. The 22.5-acre action area includes seven boring sites (Piers 5-10 and Abutment 11), SR-76, access routes to these sites that are located east of SR-76 and the San Luis River Bridge, and a staging area that is located immediately north of the intersection at SR-76 and North River Road.

4.5.2 Small Projects and Storm Water Operations along State Route 76

On August 29, 2007, the Service issued a draft programmatic biological opinion (FWS-SDG-3946.7) for project related effects from various small projects and storm water operations along SR-76 on arroyo toad, vireo and its designated critical habitat, flycatcher and its designated critical habitat, gnatcatcher and its designated critical habitat, the endangered light-footed clapper rail (*Rallus longirostris levipes*), and ambrosia. Drainage improvements and maintenance project activities for storm water facilities are conducted by the Caltrans along SR-76 within the San Luis Rey River watershed. The biological opinion also provides guidance for emergency repairs. Drainage improvements and maintenance projects, covered by the biological opinion would occur within 200 feet from the paved road surface, or up to but not beyond Caltrans' ROW fence or unmarked ROW boundary, whichever is less. Individual drainage and maintenance projects would not exceed one (1) acre of total area impacted. Projects that exceed one (1) acre of total impacts and/or extend beyond the Caltrans ROW would be reviewed on a case-by-case basis and require a project specific tiered biological opinion appended to the programmatic opinion. In a given calendar year, total project impacts (permanent and temporary) would not exceed 10 acres, of which up to 5 acres would be permanent.

4.5.3 San Luis Rey River Flood Control

Construction of the flood control project from 1988-2000 resulted in the confinement of the San Luis Rey River and the permanent loss of 1,985 acres of the 100-year floodplain and an additional 1,209 acres of 500 year floodplain (total 500 year loss is 3,194 acres). This action

consequentially resulted in the loss of arroyo toad populations and reduced the carrying capacity of the channel for vireo and flycatcher, by reducing the amount of available habitat. Furthermore, the construction of the levees acts to constrict floodwaters, and to increase both its velocity and force, making the remaining riparian habitat more susceptible to washing out during a flood.

In December 2005, the Corps began removing vegetation within the channelized stretch of the San Luis Rey River to alleviate flood concerns by regaining the functionality and capacity of the river. Exotic plants have been and will continue to be removed. Implementation of the project will clear approximately 55 acres of exotic plant species, mostly *Arundo donax* and *Tamarix* sp., from a maximum 100-foot swath of vegetation along an approximately 5-mile reach of the flood control channel between Benet Road and College Boulevard. Additional clearing, consisting of native vegetation will occur in phases with an overall goal of providing 71,200 cubic feet per second of flow in channelized stretch of the river. An unquantified amount of sediment may be removed to achieve desired flow.

4.5.4 Rosemary's Mountain Quarry

The proposed Rosemary's Mountain Quarry and associated SR-76 improvements project areas are located on the north side of SR-76, approximately 1.25 miles east of I-15. The proposed quarry site and the proposed road improvement area are located north of the San Luis Rey River. Native upland and riparian vegetation communities within this stretch of the river are known to support several federally-listed species including, vireo, flycatcher, arroyo toad, and gnatcatcher. Vireo surveys detected 22 vireo territories, one transient, and 2 dispersing vireos. The 22 territories included five in Horse Ranch Creek and 17 in the San Luis Rey River.

The project would permanently impact approximately 15.2 acres of arroyo toad upland habitat. Impacts to 14.6 acres of suitable upland arroyo toad habitat would be offset by the perpetual preservation and management of 14.6 acres of suitable arroyo toad upland habitat. The remaining 0.6 acre would be offset by the restoration of the 14.6 acres. The proposed project would result in direct impacts to 1.6 acres of vireo/flycatcher habitat. The 1.6 acres of impact include 1.5 acres of designated critical habitat for the flycatcher and 1.3 acres of designated critical habitat for the vireo. Creation/ restoration/enhancement of 4.8 acres of riparian habitat within designated vireo/flycatcher critical habitat in the San Luis Rey River would be used to offset this impact. Impacts to 40 acres of gnatcatcher habitat (including critical habitat) would be off-set through the on-site preservation and management of 12.6 acres of coastal sage scrub and 3.9 acres of coastal sage-chaparral, and the off-site purchase, preservation, and management of 63.59 acres of coastal sage scrub within Critical Habitat Unit 5 on and adjacent to the Sangra Ranch property.

4.5.5 Unauthorized Dredge and Fill

The Environmental Protection Agency issued an administrative order to Brown Bulk Transportation Inc. and Valley Material and Supply Company on August 10, 2000, with regard to an unpermitted aggregate mining operation within the San Luis Rey River. According to the

EPA, on numerous days between January 1997 and January 2000, heavy equipment such as bulldozers, front-end loaders, excavators, and dump trucks discharged dredged and fill materials, primarily consisting of earthen materials such as sand, gravel, dirt and rocks, into the San Luis Rey River. The parties also stockpiled and sorted aggregate within the boundaries of the San Luis Rey River, constructed an earthen levee (which altered the hydrology at the confluence of Pala Creek and the San Luis Rey River), removed hundreds of thousands of cubic yards of aggregate from the main channel of the River, and excavated a pit in the main channel of the San Luis Rey which measures approximately 800 feet in length, by 500 feet in width, by 20 feet in depth. At least 3 arroyo toad males were located in the San Luis Rey River, downstream of its confluence with Pala Creek in the spring of 2001 (Jesse D'Elia, Service, *personal observation*). However, the pit that was created has provided more habitat for bullfrogs (*Rana catesbeiana*) which utilize deep standing water to complete their life cycle. In fact, several bullfrogs were found within a few meters of all 3 calling male arroyo toads (Jesse D'Elia, Service, *personal observation*) and 1 bullfrog was found within inches of a calling arroyo toad.

4.5.6 Sand Mining

In 1986, J.W. Sand and Materials, Inc. began mining sand from a 42-acre site in the San Luis Rey River channel approximately 1 mile east of I-15. The County of San Diego Major Use Permit for the project permitted excavation to a depth of 10 feet within approximately 40 acres of the 42-acre site. As part of the permit conditions, J.W. Sand and Materials was required to prepare and implement a revegetation/reclamation plan for the 40-acre impact area. Mining activities have concluded and the revegetation plan has been implemented.

4.5.7 Pala Casino

A casino was built on the Pala Indian Reservation in 2000 and 2001 directly to the west of Pala Creek, just north of the San Luis Rey River floodplain. This project resulted in the loss of approximately 20 acres of low quality upland arroyo toad habitat. As part of the gaming facility project, the Tribal water system and wastewater system for the Reservation was upgraded to provide water and sewer services to the casino. This upgrade included two new water supplies wells which were each able to produce 200 gallons per minute. To compensate for these impacts, the Pala Tribe has designated a 40-acre parcel of land upstream along the San Luis Rey River as a preserve for arroyo toads.

4.5.8 Rincon Casino

The project resulted in the loss of approximately 53 acres of high quality upland arroyo toad habitat and the translocation of 143 arroyo toads. To off-set the impacts to arroyo toad upland habitat, the Rincon Tribe has committed to purchase and preserve 53 acres of suitable arroyo toad upland habitat along the San Luis Rey River. In addition, the Tribe has committed to the preparation and implementation of a long-term management plan on the portion of the San Luis Rey River, and adjacent upland habitat, located on the Rincon Reservation.

4.5.9 Wildfires

In October and November of 2003, southern California experienced significant wildfire activity. The fires were distinguishable into 15 areas and burned a total of approximately 743,439 acres in Los Angeles, Riverside, San Bernardino, San Diego, and Ventura counties. It is unclear how much habitat for arroyo toad, vireo, and flycatcher burned in the fires as pre and post fire surveys were not completed across the range of these species where the fires burned. However, 111,725 acres of riparian habitat exists within Los Angeles, Riverside, San Bernardino, San Diego, and Ventura counties and the 2003 fires burned 5,668 acres (5 percent) of this area. The most significant impacts occurred in San Diego (3,186 acres), San Bernardino (1,304 acres), and Ventura (1,116 acres) counties due to the Cedar, Old, and Simi fires. In the case of the Cedar fire alone, the fire burned 2,314 acres of riparian habitat in San Diego County.

In October 2007, large wildfires returned to San Diego County burning approximately 370,000 acres. A complete analysis of impacts to these species has not been completed. Considering only Department of Interior owned lands in San Diego County, approximately 24,600 acres of habitat for vireo, flycatcher and gnatcatcher burned. The actual total acreage of species habitat (critical, suitable, modeled) burned during the 2007 fires is likely much higher as non-Department of Interior lands containing species habitat also burned.

It is assumed that no individual vireo or flycatcher were killed or harmed directly by the wildfires as they are migratory species and were not present when the fires occurred. Gnatcatcher were very likely harmed or killed during the wildfires as they are a resident species. Temporal loss of habitat and habitat type conversion are additional adverse effects these species, whether migratory or not, must cope with.

It is very difficult to quantify the impacts the wildfires have had on arroyo toad and there are potential impacts from the fire itself, as well as numerous scenarios that could adversely affect arroyo toad post-fire. Wildland fires change run-off and sedimentation patterns and severe fires may result in significant leaching of post-fire ash and releases of nutrients into stream water (Wright and Bailey 1982). Large deposits of sediment in the river channel following fires can affect the amount of habitat available for amphibian breeding and rearing, reducing reproductive output and recruitment (Gamradt and Kats 1997). Several fires have occurred in the recent past that has deposited post-fire ash in arroyo toad breeding areas of the San Luis Rey River. We believe that these events likely caused arroyo toads to find alternate breeding sites or may have prevented them from breeding in the spring following the fires because it is doubtful that arroyo toad breeding pools would form in the area affected by the fire-induced sedimentation deposits.

4.5.10 Groundwater Pumping

Individual landowners, private water bottling companies, municipalities, and Tribes along the San Luis Rey River continue to pump unknown quantities of water from the river, as this activity is largely unregulated.

Oceanside currently pumps 8 percent of its water supply from the San Luis Rey River aquifer (http://www.oceansidecleanwaterprogram.org/slrr_w.asp). The Pala Tribe also pumps a

significant amount of groundwater to meet the needs of the town as well as its hotel/casino. Water for private bottling is ongoing on top of Palomar Mountain with an unquantifiable impact to the headwaters of the San Luis Rey River. In the San Luis Rey River watershed, surface water and groundwater are an integrated system (PBS&J 2003). Groundwater pumping in the 1950s and 1960s caused the San Luis Rey River to become ephemeral. After construction of the San Diego aqueduct in 1947, imported Colorado River water become available and groundwater pumping in the San Luis Rey River declined. Nevertheless, groundwater pumping is ongoing. Groundwater pumping has the potential to change the hydrology (amount and timing of flows) within the San Luis Rey River which can reduce or eliminate habitat for all species associated with the river.

4.5.11 Vector control

The County of San Diego has been conducting vector control activities in the San Luis Rey River during the bird and amphibian breeding seasons. Activities involve hand-broadcasting and helicopter drops of larvacide (*Bacillus* sp.) into breeding pools along the corridor. Impacts to federally-listed species from these activities are unknown and could involve impacts to diets and breeding behavior.

5. EFFECTS OF THE ACTION

This section presents an analysis of the direct and indirect effects of the proposed action on the arroyo toad, flycatcher, vireo, gnatcatcher, and ambrosia and their designated critical habitats, including interrelated and interdependent actions (Figure 28-31). The degree to which any of these activities affect the above species is described in terms of modification of suitable habitat and surface disturbance. These effects are discussed with respect to the conservation needs of the arroyo toad, vireo, flycatcher, gnatcatcher, and ambrosia and their designated critical habitats within the action area and within the larger conservation strategy for these species.

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that would be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

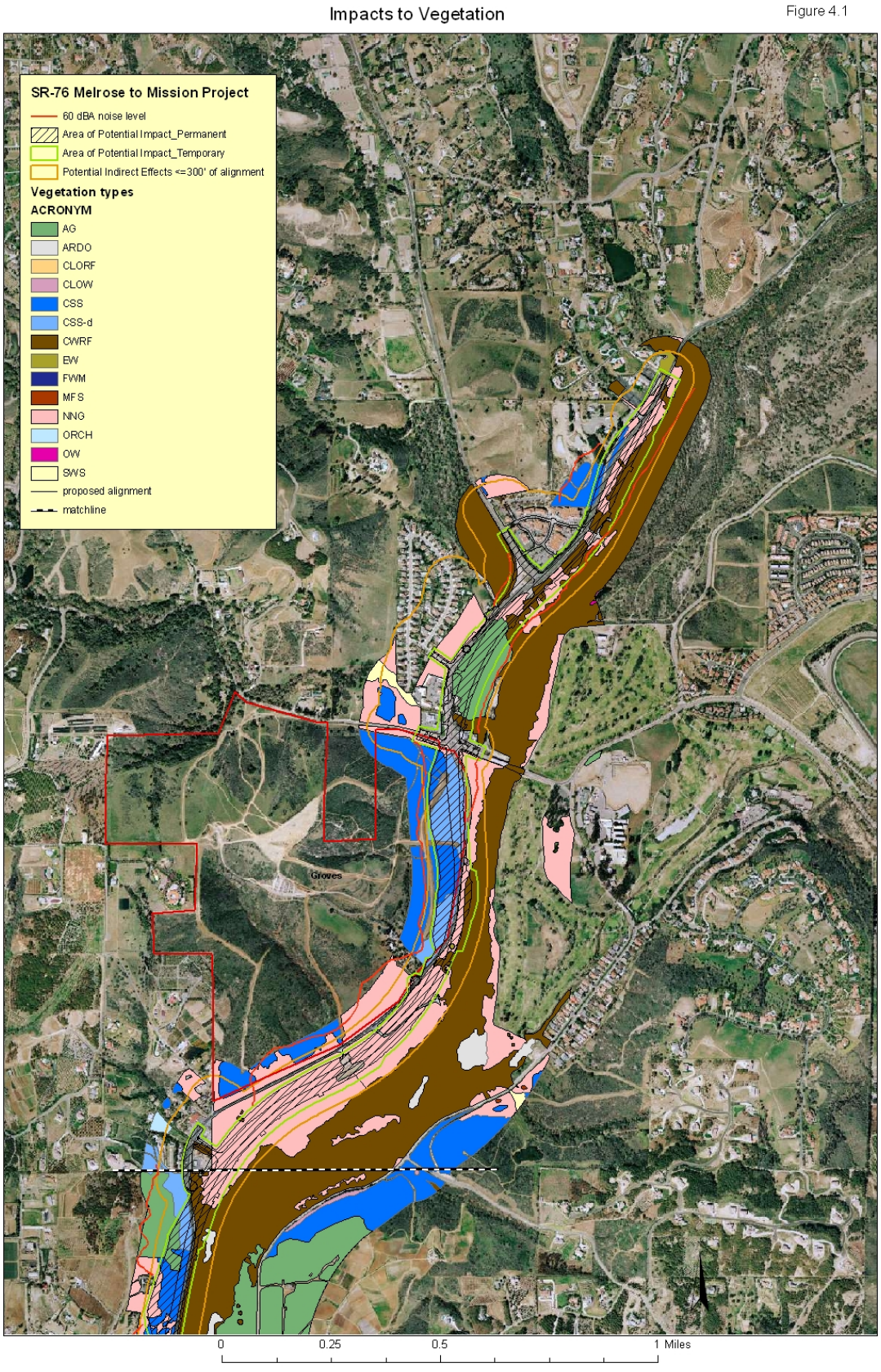

Figure 28. SR-76 Middle Impacts to Vegetation

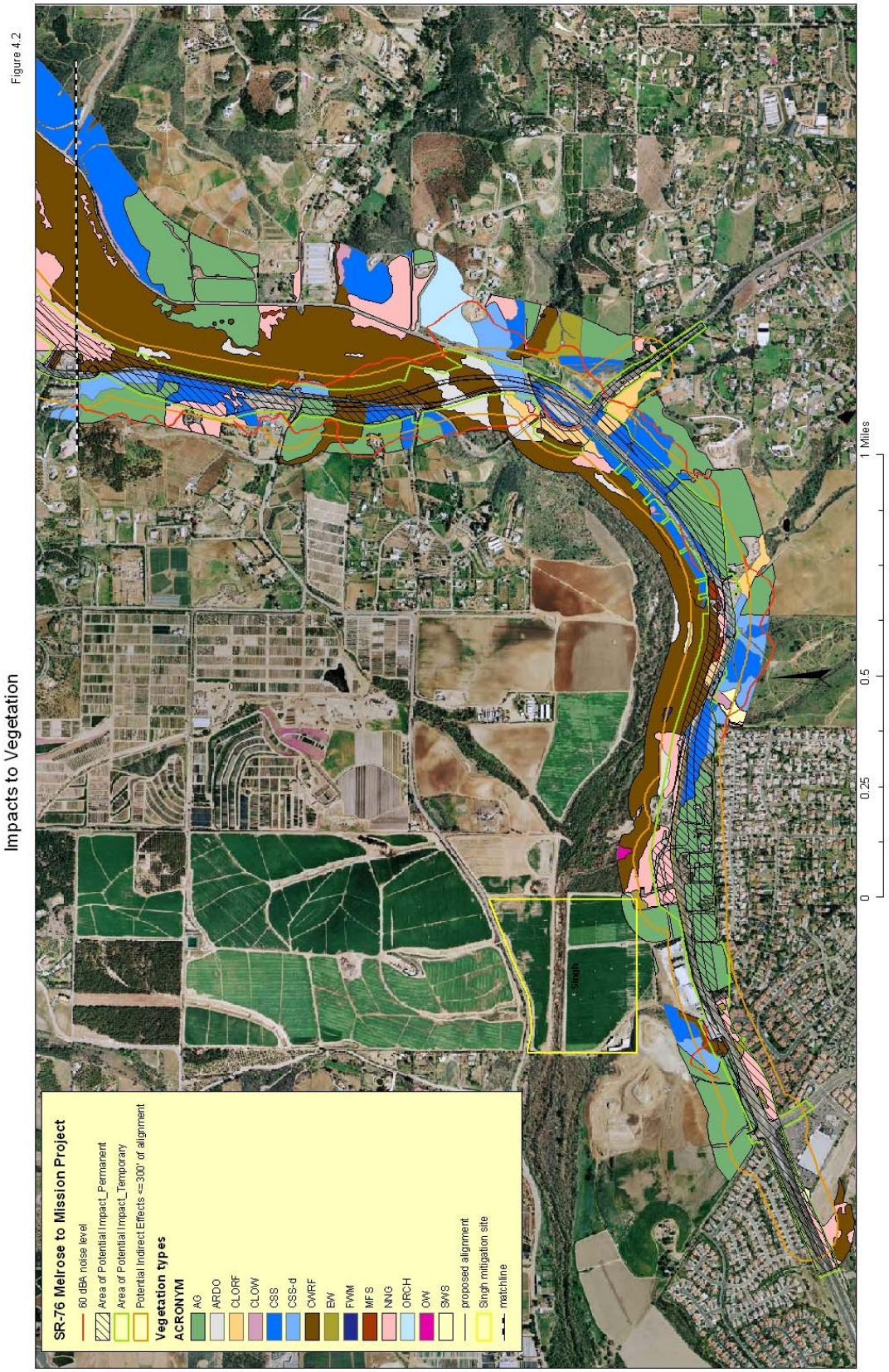

Figure 29. SR-76 Middle Impacts to Vegetation

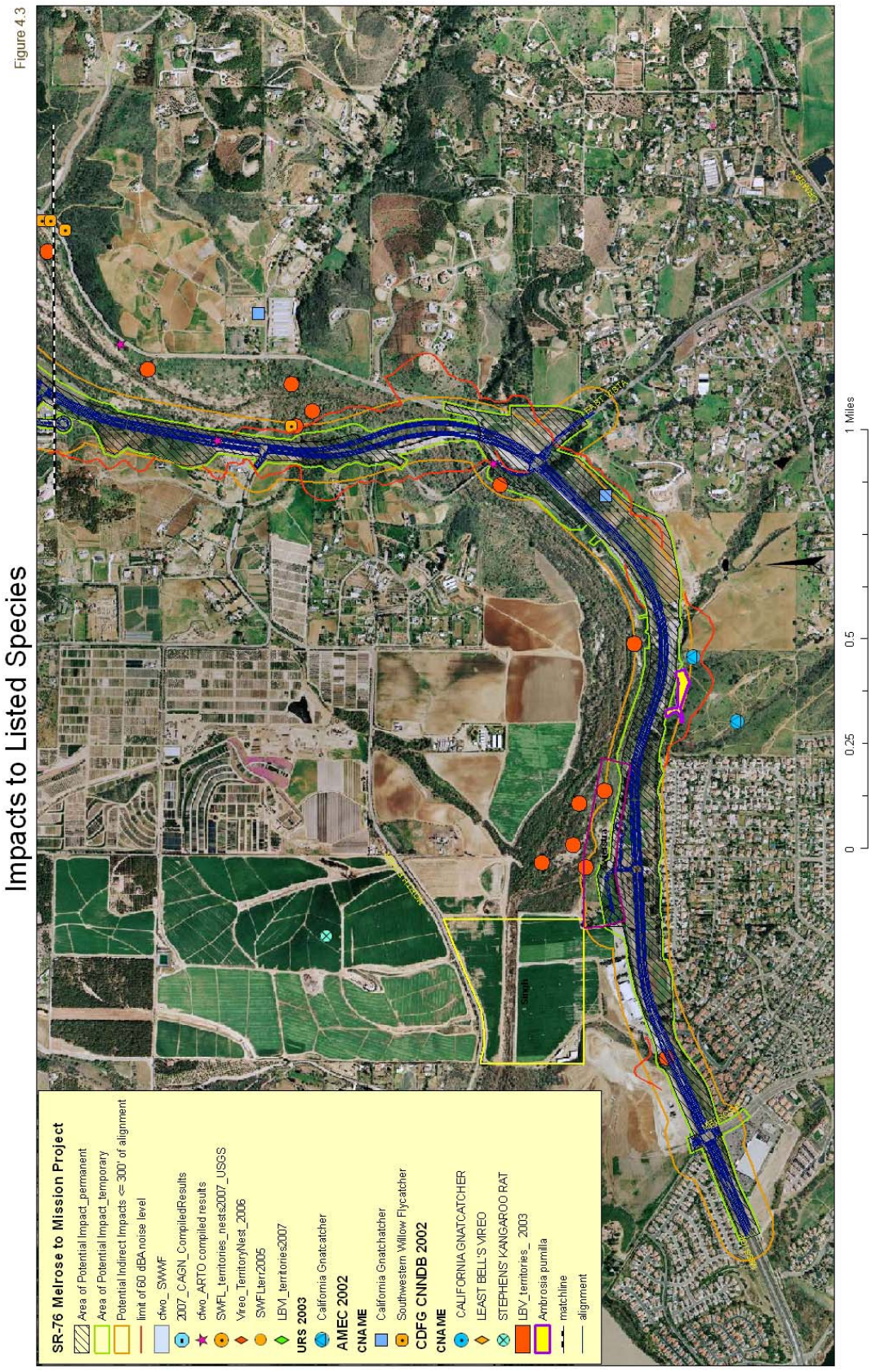

Figure 30. SR-76 Middle Impacts to Species

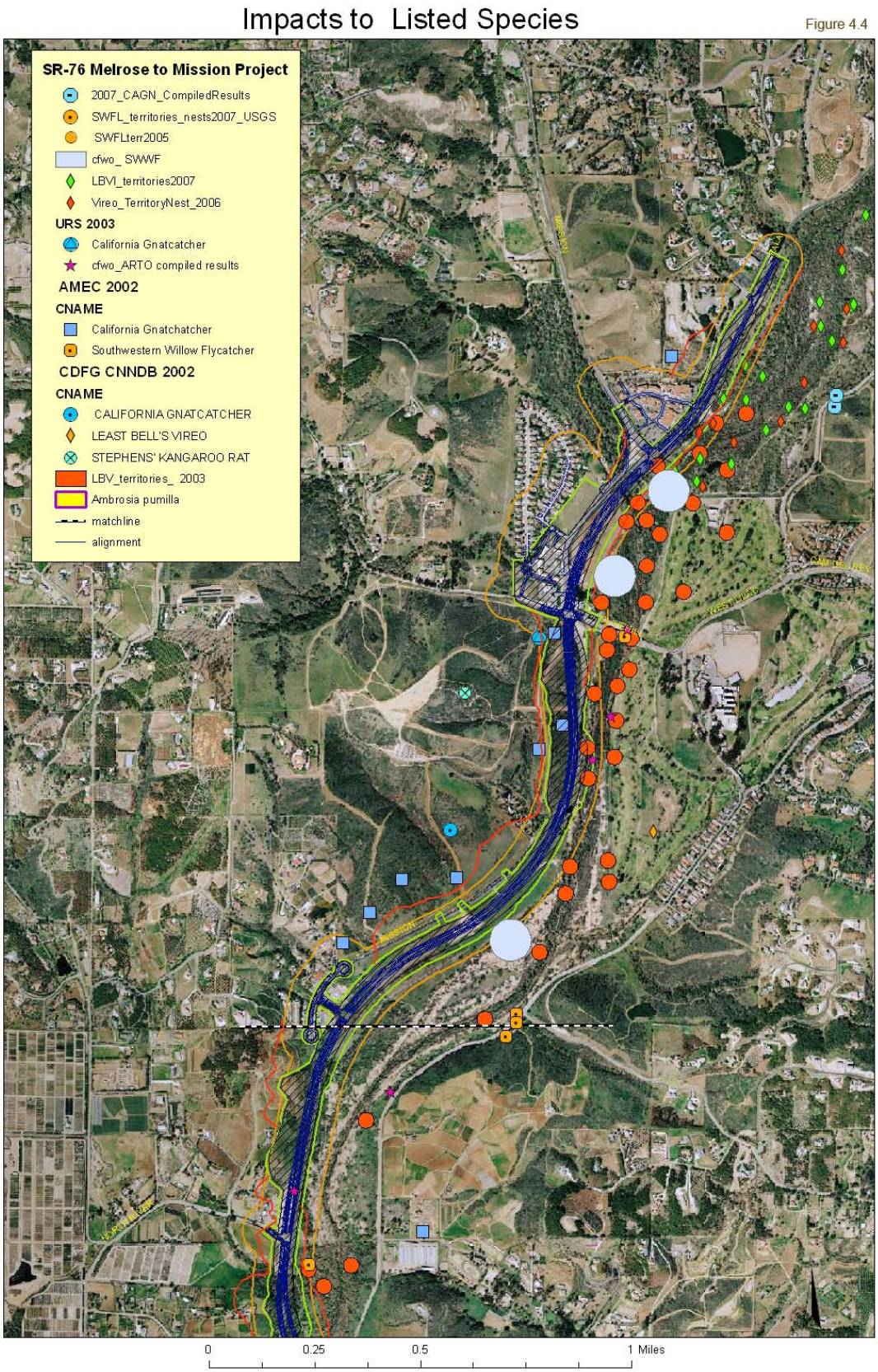

Figure 31. SR-76 Middle Impacts to Species

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statute and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task force v. U.S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to critical habitat.

Effects to habitats located within the alignment footprint are considered permanent direct effects, and impacts to habitat located between the alignment and limits of disturbance (for construction access and grading) were assessed as temporary direct effects. Construction and operation of the SR-76 Melrose Drive to South Mission Highway Improvement project will result in permanent impacts to arroyo toad, vireo, flycatcher, and gnatcatcher habitat. Approximately 22.66 acres of riparian and wetlands, 24.36 acres of Diegan coastal sage scrub, 13.28 acres of disturbed Diegan coastal sage scrub, and 43.17 acres of non-native grassland would be removed by construction (see Table 1). Another 7.86 acres of combined coastal sage scrub and disturbed coastal sage scrub, 15.87 acres of riparian and wetlands, and 10.66 acres of non-native grassland would be temporarily disturbed.For purposes of evaluation, the areas located within 300 feet of the proposed alignment's edge of traveled way, as well as anticipated traffic noise at or above 60 dBA, were considered as the area of indirect effects. Traffic noise associated with the project may have a permanent indirect effect on listed and sensitive species. Because birds are dependent upon sound and can be sensitive to noise, Caltrans analyzed the potential effects of the project's noise on those birds within the project area that are federal or state listed as threatened or endangered. Caltrans study used a value of 60 decibels on the A-scale (dBA) as the level at which potential effects could occur to sensitive avian wildlife (see Table 2).

5.1 Proposed Compensation

Permanent direct impacts to the vegetation communities listed in Table 1 would be offset through the implementation of one of the two options in Tables 3-8 and as discussed below.

Temporary disturbance to both upland and riparian habitats, within the project area, would be offset through native revegetation of the area (1:1 ratio) upon completion of construction. All seeding/planting will occur on site within the temporarily disturbed habitat and involve replacement with in kind/similar native species, to the maximum extent practicable. Temporary disturbance to cottonwood willow riparian forest, where this habitat contains the primary constituent elements for arroyo toad, vireo, and flycatcher, would be offset though native revegetation of the area, as above, and will include restoration of similar habitat at the Morrison property at an additional 0.5:1 ratio, for a total of 1.5:1 ratio. All indirect impacts (with the exception of arundo/disturbed wetland) will be offset at a 1:1 ratio through restoration/enhancement at the Morrison property or preservation at the Groves. Indirect effects to arundo/disturbed wetland will be offset at 0.5:1 through restoration of riparian scrub/riparian forest at Morrison.

5.1.1 Option A (Tables 3-5)

Option A proposes to offset permanent direct impacts to riparian and wetland communities through the creation of wetland communities (1:1 ratio) at the Singh and/or Zweirstra properties, purchase of 4.94 acres of wetland creation credits at the Pilgrim Creek Mitigation Bank, and the restoration/enhancement of riparian forest and riparian scrub at the Morrison Property (2:1 ratio), for a total compensation ratio of 3:1. Permanent direct impacts to upland habitats would be offset through off-site preservation at the Groves at a 2:1 ratio for coastal sage scrub (including disturbed), 3:1 ratio for coast live oak woodland, 1:1 ratio for non-native grassland arroyo toad habitat, and 0.5:1 ratio for non-toad habitat non-native grassland. All mitigation sites would have a restoration/creation/enhancement plan for short term and habitat management plan to further ensure all habitat types are self-sustaining over the long term.

At the Singh location, located near the southern end of the project, approximately 37.9 acres of riparian scrub/riparian forest creation and 5.5 acres of freshwater marsh/riparian scrub restoration would be created/restored and preserved. At the Morrison site, located along the San Luis Rey River north of the project area, an estimated 148.28 acres of riparian scrub/riparian forest would be restored and preserved with additional ambrosia translocation occurring on the property. The Zweirstra site has the potential for 3.4 acres of riparian scrub/riparian forest creation and 3.3 acres of riparian scrub/riparian forest restoration. In addition, approximately 13.6 acres of coastal sage scrub creation/buffer could occur on the Singh property and 7 acres of coastal sage scrub creation/buffer could occur on the Zweirstra property. This proposed upland creation would be available to offset impacts from future projects (e.g., SR-76 East). The Groves property, located just west and adjacent to the current SR-76, would be utilized to compensate for permanent impacts to upland habitats. The Groves site contains upland areas consisting of approximately 180 acres of coastal sage scrub, 50 acres of non-native grassland, 0.5 acres elderberry scrub, and 11 acres of coast life oak woodland.

Through a combination of preservation, restoration, creation, and enhancement, habitat for the arroyo toad, gnatcatcher, vireo, flycatcher, and ambrosia would be managed and preserved in perpetuity.

5.1.2 Option B (Tables 6-8)

Option B proposes to offset permanent direct impacts to riparian and wetland vegetation types through restoration/enhancement at Morrison, creation at Zweirstra, and the purchase of wetland creation credits at the Pilgrim Creek Mitigation Bank (Tables 6, 7, and 8). Permanent direct impacts to upland habitats would be offset through off-site preservation at the Groves using the ratios shown in Tables 7 and 8. The approximately 7 acres of upland creation at Zweirstra would be available to offset impacts from future projects (e.g., SR-76 East). See Tables 7 and 8 for more details. All mitigation sites would have a restoration/creation/enhancement plan for short term and habitat management plan to further ensure all habitat types are self-sustaining over the long term.

This option would offset permanent direct impacts to 1.11 acres of mulefat scrub, 0.13 acre of southern willow scrub, 3.09 acres of southern coast live oak riparian forest, and 9.99 acres of southern cottonwood willow riparian forest at a 5:1 ratio. Impacts to 4.94 acres of Corps jurisdictional southern cottonwood willow riparian forest would be offset at a 1:1 ratio through the purchase of creation credits at the Pilgrim Creek Mitigation Bank. Impacts to an addition 3.4 acres of southern cottonwood willow riparian forest would be offset at a 3:1 ratio through a combination of 1:1 creation at Zweirstra (3.4 acres) and 2:1 restoration at Zweirstra (3.3 acres) and Morrison (3.5 acres). Arundo/disturbed wetland would be offset at a 1:1 ratio through the restoration of 0.003 acre at Morrison (Table 7 and 8).

Caltrans would restore approximately 148.28 acres of native riparian scrub/forest habitat for vireo and arroyo toad to mitigate for impacts to riparian forest/scrub. In addition to the restored habitat, approximately 27 acres of degraded habitat, within the Caltrans right of way along SR-76, would be enhanced through exotic removal; however, some of this area may be impacted by the future widening of SR-76. Within the 149 acre restoration area, approximately 6.53 acres of non-native grass and mustard degraded meadow would be de-thatched to open up this habitat for use by arroyo toads. These restoration activities would create additional arroyo toad habitat and restore vireo habitat along the corridor.

5.2 Wildlife Corridors

Impacts to wildlife corridors due to habitat loss would be compensated by mitigation discussed above and shown in Tables 3-8. Loss of habitat connectivity would be addressed by the placement of wildlife crossings and directional fencing at suitable locations.

The wildlife crossings assessment conducted by Caltrans determined suitable wildlife crossings as part of the SR-76 Melrose Drive to South Mission Highway Improvement project. The assessment was performed by: utilizing GIS mapping to illustrate the spatial extent of the linkage zone and any recognized areas of high conservation value; conducting site assessments to identify existing and potential crossing locations for large and medium-bodied mammals, including mule deer, mountain lion, coyotes and bobcats; prioritizing wildlife crossing locations and developing design alternatives that maintain or enhance the functionality of this linkage. In addition to large mammals, species occurrences include medium-bodied mammals such as raccoon, gray fox, striped skunk, long tailed weasel, desert cottontail and gray squirrel. Small mammals, such as mice species, as well as toad and frog species, lizards, and snakes are present in the project vicinity and are known to utilize wildlife crossings. The assessment identified specific factors relating to wildlife crossings, including habitat linkages that corresponded to designated open space areas, preservation areas and areas under public ownership. Existing connectivity at roads was evaluated, including culverts, undercrossings and bridges. Specific landscape features were assessed, including ravines, riparian areas, wetlands and tributaries of the San Luis Rey River, and locations at which these resources where separated by roads and/or developed areas. A determination was made of intersecting locations where the proposed project had the potential for retrofitting existing or adding new crossing structures (University of California, Davis and Department of Transportation, 2007). Wildlife movement across the roadway will be discouraged; traffic along this stretch of SR-76 is unlikely to allow successful

crossings. Further, wildlife crossings will be discouraged where suitable habitat does not exist on the other side of the road.

Wildlife fencing would consist of 8-foot tall chain link fence buried 1 foot underground. Beginning at the Singh eastern property line, wildlife fencing will be placed along the north side of the alignment until just past the southern San Luis Rey Bridge abutment. Wildlife fencing would be constructed along the south side of the alignment beginning at the eastern edge of Jefferies Ranch development and continue to East Vista Way. North of the bridge, wildlife fencing would also include permanent 0.25-inch hardware cloth toad fencing that would be buried 1 foot underground and extend 2 feet above ground. This fencing would funnel wildlife of all sizes to crossings. Fencing would continue along the southern side of the alignment to the northern project limit. Toad and wildlife fencing would also be placed along the north side of the alignment from Via Montellano until the road grading begins along the edge of the Groves property. Wildlife fencing would continue until Olive Hill Road. Toad and wildlife fencing would also be placed along the north side of the road alignment where it borders the Bonsall Preserve.

Suitable wildlife crossings were found at the following sites (see Figure 11).

1. South of the river near the Oceanside/Bonsall boundary, directional fencing and a wildlife under crossing would benefit wildlife by enhancing connectivity, and will limit incidences of roadkill. This wildlife under crossing will be a RCB culvert measuring 8 ft high, 14 ft wide and 180 feet long within a corridor that consists of a strip of oak forest and leads to and from rural residential, agricultural vacant lands and open water. The Marron mitigation parcel lies immediately northeast of this location. Directional fencing would be provided along both sides of the proposed highway project and would extend northeast to East Vista Way, and southwest to the Jeffries Ranch subdivision south of SR-76; the north side would continue to the Singh mitigation parcel.

2. At Ostrich Farms Creek, a bridge will be constructed that will allow wildlife to pass underneath the alignment. It would be approximately 5 feet high, 46.19 feet wide and 140.75 feet long. The exact height is still to be determined. Design features include a soft bottom channel to increase wildlife movement. This crossing would allow movement between the Bonsall Preserve and the San Luis Rey River. This larger structure would provide greater opportunity for wildlife to cross the roadway than currently exists.

3. Two locations along the proposed project and adjacent to the Groves mitigation site would be fitted with box culverts. This would provide wildlife movement between the site and the San Luis Rey River. At the western location, box culvert measuring 12 feet high, 26.65 feet wide and 111.25 feet long would be constructed, allowing movement to and from upland habitats. Culverts with appropriate substrate may provide connectivity for most small and medium mammals, reptiles, amphibians, and possibly large mammals. At the eastern location, a box culvert measuring 10 feet high, 13.98 feet wide and 173.88 feet long would be constructed, providing a connection between upland habitat at the Groves mitigation site and San Luis Rey River riparian areas.

5.3 Arroyo Toad

No construction activities are proposed during the arroyo toad breeding season (March 15-July 31) within suitable arroyo toad breeding habitat; therefore, no impacts are anticipated to occur to breeding arroyo toads, arroyo toad eggs, and/or arroyo toad larvae. However, adult and juvenile arroyo toads may still remain after translocation efforts are completed and may be burrowed within the impact area(s) or moving through the active construction site.

5.3.1 Direct Impacts

The proposed project would cause direct effects to the arroyo toad from excavating, filling, or driving on arroyo toads burrowed into the soil or moving within the project footprint, or trampling of arroyo toads by work crews. In addition, the effects related to the translocation of arroyo toads are unknown. Handling procedures are detailed in the *Declining Amphibian Population Task Force's Code of Practice* (proposed for revision). Following these procedures is a conservation measure of this Opinion and should reduce or eliminate direct death or injury if followed and arroyo toads react uniformily. However, eliciting the emergence of arroyo toads and translocating them could result in currently unknown physiological, ecological and biological impacts, as it could conceivably occur anytime of the year including mid-aestivation.

Direct impacts would result in the permanent loss of 22.66 acres of riparian and wetland habitat types that are potential breeding habitats for the arroyo toad. Temporary disturbance would impact an additional 15.87 acres of riparian and wetland vegetation.

Potential aestivation areas within 3,000 feet of known arroyo toad populations were evaluated; permanent impacts to these areas include 0.005 acre of coastal sage scrub (including disturbed coastal sage scrub), 30.72 acres of non-native grassland, and 37.52 acres of agricultural land. Temporary impacts would occur to 2.61 acres coastal sage scrub (including disturbed), 11.75 acres of non-native grassland, and 2.30 acres of agricultural land that provide potential arroyo toad aestivation habitat[3].

Approximately 148.28 acres on the Morrison property and adjacent Caltrans right-of-way would be impacted through the restoration/enhancement of riparian scrub/forest. The majority of this area would be planted with cottonwood, oak, sycamore, and other riparian species to fill gaps after the removal of exotic species (e.g., arundo). This acreage includes approximately 6.53 acres of non-native grassland and degraded meadow on Morrison that would be dethatched and replanted with a mixture of native grasses, forbs, and upland or upland/riparian transitional species to enhance the area for arroyo toads.

5.3.2 Indirect Impacts

[3] Upland habitats, which the arroyo toad may use for aestivation, include coastal sage scrub, non-native grassland, and agricultural land.

Indirect effects likely would occur to approximately 75.63 acres of riparian and wetland habitat, 1.26 acres of coastal sage scrub, 17.01 acres of non-native grassland, and 2.39 acres of agricultural land.

Indirect effects, including increased invasive flora and fauna and increased predation, are expected to occur as a result of the proposed project. Invasive species are now recognized as a threat to biodiversity in native plant communities, second only to direct habitat loss and fragmentation (Pimm and Gilpin 1989, Scott and Wilcove 1998). Non-native, weedy species often out-compete and exclude native species, potentially altering the structure of the vegetation, degrading or eliminating upland habitat utilized by the arroyo toad, and providing food and cover for undesirable non-native animals (Bossard *et al* 2000). Furthermore, the increased irrigation required by many common landscaping species may provide suitable conditions for the establishment of introduced Argentine ants (*Linepithema humile*) within the on-site and adjacent biological open space areas. Argentine ants can build up to large colonies and eliminate the native ant fauna that is a major food source of the arroyo toad (Holway 1995, Human and Gordon 1997). In addition, human activity in the project area, during construction and throughout the life of the proposed project, may result in accumulation of trash and food, attracting predators that prey on arroyo toads, as well as increased frequency of intrusion into on-site and adjacent biological open space areas by humans and domestic animals.

Overspray or over-application of herbicide is a concern as immediate contact or delayed contact (leaching) with arroyo toads may be lethal or result in adverse effects.

In addition to the indirect effects described above, arroyo toads have the potential to cross SR-76 when moving between the San Luis Rey River and upland habitats. Undocumented breaches in the permanent arroyo toad barrier fencing are likely to occur over the life of the project. Arroyo toads that enter the SR-76 roadway have a very high potential of being struck by motor vehicles as the project would result in increased vehicle capacity and volume. It is likely that the SR-76 would represent a complete barrier to arroyo toads.

5.3.3 Conservation Measures to Offset Impacts to Arroyo Toad

Compensation for permanent direct impacts to riparian and wetland habitats would occur at either a 3:1 or 5:1 ratio, depending on which option is chosen (see Tables 3-8). Permanent impacts to upland habitat would offset at 2:1 for coastal sage scrub (including disturbed) and 3:1 for coast live oak woodland. Where non-native grassland provides potential habitat for arroyo toad aestivation, impacts would be offset at a 1:1 ratio. Non-toad grassland impacts would be offset at a 0.5:1 ratio.

To avoid and minimize direct effects to the arroyo toad, exclusionary fencing would be installed. The area within the barrier fence would be surveyed by a Service-approved biologist prior to construction. If climatic conditions are not appropriate for arroyo toad movement during the clearance surveys, the biologist would attempt to illicit a response from the arroyo toad by irrigating the area to simulate a rain event. Any arroyo toads detected within the barrier fencing would be picked up by a biologist and placed on the outside of the barrier fence within the

nearest suitable habitat. All fencing materials would be removed following construction. Ingress and egress of construction equipment and personnel would be kept to a minimum, but when necessary, equipment and personnel would use a single access point to the site. This access point would be as narrow as possible and would be closed off by exclusionary fencing when personnel are not on the project site.

Utilizing an experienced arroyo toad biologist for translocation efforts and oversight of the exclusionary fencing would greatly increase capture rates of arroyo toads and ensure further exclusion from the impact areas.

Directional fencing and a wildlife undercrossing placed at the south side of the San Luis Rey River near the Oceanside/Bonsall boundary would enhance connectivity for wildlife species and limit incidences of roadkill and at the Bonsall Preserve/Ostrich Farms Creek crossing a bridge is planned to provide wildlife movement where none currently exists. In addition, strategically placed wildlife crossings from the San Luis Rey River to drainages at the Groves property would provide additional wildlife movement opportunities. Therefore, the widening of SR-76 is not anticipated to preclude connectivity between arroyo toad breeding areas and suitable upland habitat or result in the fragmentation of suitable arroyo toad upland habitat. To minimize road mortality, a permanent arroyo toad barrier fence would be installed between the San Luis Rey River and SR-76 to prevent arroyo toads from attempting the dangerous crossing where movement into the upland is not possible or beneficial.

To avoid and minimize impacts to arroyo toads currently using portions of the Morrison property, no grading is proposed during restoration. Exotic plant species would be removed from the entire site outside the arroyo toad breeding season and natives would be replanted to enhance the habitat on site for both the arroyo toad and vireo.

Temporary disturbance to potential arroyo toad habitat would be offset through native revegetation of the impacted area (1:1 ratio) upon completion of the project. Indirect impacts would be offset at 1:1 for all potential arroyo toad habitats except disturbed wetland/giant reed that would be offset at a 0.5:1 ratio. Other measures to avoid/reduce adverse effects on the arroyo toad would involve restricting vegetation clearing from occurring during the breeding season (working from July 1 through March 1), except for a minimal amount of cutting vegetation to increase detection during the clearance surveys, having a Service-approved restoration plan, as well as other measures designed to avoid or minimize impacts.

5.3.4 Summary of Impacts to Arroyo Toad

Direct impacts would result in permanent impacts to approximately 22.66 acres of riparian and wetland habitat types which are potential breeding habitats for the arroyo toad and 0.005 acre of coastal sage scrub (including disturbed coastal sage scrub), 30.72 acres of non-native grassland, and 37.52 acres of agricultural land that may provide aestivation habitat. Temporary impacts would occur to 2.61 acres coastal sage scrub (including disturbed), 11.75 acres of non-native grassland, and 2.30 acres of agricultural land that provide potential arroyo toad aestivation habitat. Non-native habitats impacted would be restored with natives.

Conservation measures require an arroyo toad exclusion fence and all arroyo toads appropriately removed from within the impact area(s) and translocated. No direct impacts to breeding arroyo toads, their nests, eggs, or young are expected from construction activities related to the proposed project. Direct and indirect effects would be avoided and/or minimized through implementation of the conservation measures in this biological opinion.

The project would impact approximately 1.05 percent of the 8,669 acres of habitat that occurs within excluded critical habitat unit 14. The loss of this small percentage of habitat is not expected to reduce the function or connectivity of this unit should it be reconsidered and designated in the future.

5.4 Southwestern Willow Flycatcher and Least Bell's Vireo and Critical Habitat

The proposed action is likely to result in adverse effects to the vireo and flycatcher, through temporal and permanent removal of habitat and road-related indirect effects. Vegetation clearing and grubbing associated with the project would occur outside of the vireo and flycatcher breeding season (March 15 through September 15) to avoid the potential for direct impacts to individual vireos and flycatchers, nests, eggs, or young along the road realignment.

5.4.1 Direct Impacts

The project would result in permanent direct impacts to approximately 22.66 acres of riparian and wetland vegetation that is suitable vireo habitat. Included in this total are approximately 18.33 acres of southern cottonwood willow riparian forest and 0.13 acres of southern willow scrub that is also potential nesting habitat for the flycatcher. Temporary impacts to approximately 15.87 acres of riparian and wetland areas, including 14.32 acres of southern cottonwood willow riparian forest, would affect vireo and flycatcher nesting and breeding habitat. No temporary impacts are expected in the southern willow scrub.

A total of 44 vireo territories were identified in the BSA during the 2003 surveys. Of this total, portions of approximately 4 territories and 5 individuals would be permanently impacted by the proposed project. Approximately 7 pairs and 6 individual vireos may be temporarily impacted. One pair of flycatchers, observed in the southern cottonwood willow riparian forest along the San Luis Rey River in the northern portion of the BSA, may be affected by the proposed project.

Both permanent and temporary project impacts would occur immediately adjacent to SR-76 within the Caltrans' right-of-way. Generally, vireo and flycatcher territories would extend up to the road and not beyond due to the high vehicle capacity of SR-76, associated road edge effects (fragmentation, noise, car collisions), and the absence of vireo or flycatcher habitat on the other side of the road. Existing fragmentation and road effects would be exacerbated from project related increases to the road capacity and volume. Implementation of project would primarily impact the edges of territories and not complete territories.

Approximately 148.28 acres on the Morrison property and adjacent Caltrans right-of-way would be impacted through the restoration/enhancement of riparian scrub/forest. The majority of this area would be planted with cottonwood, oak, sycamore, and other riparian species to fill gaps after the removal of exotic species (e.g., arundo). The application of herbicide is not expected to result in adverse effects to the vireo or flycatcher, because the application would occur to individual plants and would be greater than 100 feet from a given nest.

5.4.2 Indirect Impacts

For purposes of evaluation, the areas located within 300 feet of the proposed alignment's edge of pavement, as well as anticipated traffic noise at or above 60 dBA, were considered as the area of indirect effects. Potential vireo and flycatcher habitat within this 300-foot band was assessed as being indirectly affected by project-related road effects such as lighting, dust, increased non-native species plant intrusion, resulting in potential loss of individual vireos or flycatchers or the habitats necessary to support these species. Indirect effects could impact up to 75.63 acres of riparian habitat, including vireo and flycatcher nesting habitat. Based on the noise analyses conducted by Merkel and Associates in 2006, the project would have the net effect of increasing exposure to 60 dBA traffic noise across 29.66 acres of habitat suitable for the vireo, including 27.17 acres of habitat potentially suitable for the flycatcher. When noise effects are combined with the 300-foot area of indirect effects, the project would have the net effect of increasing exposure to 60 dBA of traffic noise across 16.72 acres of habitat suitable for the vireo and flycatcher.

Increased noise poses an indirect, potential threat to vireo within the project action area (e.g., RECON 1988, Pike and Hays 1992). Noise is thought to be potentially harmful to a variety of bird species (Gunn and Livingston 1974, RECON 1988, Pike and Hays 1992). Many birds have acute senses of hearing (Dooling 1980, Knudsen 1978, Fay and Feng 1983) and researchers have documented and described the negative effects of noise on birds. For instance, Fletcher *et al*. (1971) reported that few, if any, of the reported or suggested effects of noise on wildlife would benefit them or increase their chances for survival, whereas known, detrimental noise effects may decrease their chances for survival or even lead to their death. In the extreme, the apparent effects of noise can be devastating to wildlife populations.

Dufour (1980) of the Environmental Protection Agency (EPA) identified four major categories of noise effects on wildlife: 1) auditory physiological, 2) nonauditory physiological, 3) behavioral, and 4) masking. Although masking (i.e., interference with the reception of auditory signals because of interfering environmental noise) and behavioral considerations are of primary concern in this instance, Dr. R. J. Dooling (1980), bioacoustics expert from the University of Maryland, stated and documented that "as studies with humans have shown, noise has other deleterious effects (other than masking) and there is no reason to think that noise would not effect animals in the same way." For instance, Gunn and Livingston (1974) reported that a bird population exposed to helicopter disturbances and human activity suffered (in contrast to the control population) lower hatching and fledging success and increased rates of nest abandonment and the premature disappearance of nestlings. Woolf *et al*. (1976) concluded that prenatal

auditory stimulation can affect the development (and, therefore, the physiology) of an avian embryo inside an egg.

"Masking," however, may be most detrimental to small perching birds, like the vireo and flycatcher. In essence, "excess sound can interfere with the perception of important, relevant auditory signals" (Miller 1974). Whether a vireo or flycatcher receives potentially vital auditory information depends on such noise parameters as environmental attenuation, signal to noise ratios, and discrimination of the receiver given the background noise. The pertinent biological literature suggests that birds utilize their sense of hearing to locate their young and mates, to establish and defend territories, and to locate and evade predators (Scherzinger 1970, Shen 1983). The life of a vireo or flycatcher may well depend upon its detection of an alarm call given by another vireo or flycatcher (or other source) that warns of the approach of potential predators.

Masking noise may also affect the breeding behaviors of affected birds. Dooling (1980) concluded that, if "noise masks vireo song for the human (at some given distance) then it probably also significantly masks vireo song for the vireo." Dooling continued that "the human almost certainly does better than the vireo in hearing a signal in noise around 2 to 4 kilohertz (probably about twice as good)." Given Dooling's remarks concerning the relative acuities of human and vireo hearing and the aforementioned dependence of the vireo and flycatcher on their sense of hearing, unabated, masking noise could adversely affect vireo and flycatcher pairs or individuals that are present in, or adjacent to, the subject action area.

In addition to noise impacts, the project has the potential to degrade designated vireo and flycatcher critical habitat through introduction of exotic plants from landscaping. In some cases, exotic plants can out-compete and supplant native plants, changing the structure and floristics of the plant community upon which vireos and flycatchers depend. Furthermore, the increased irrigation required by many common landscaping species may provide suitable conditions for the establishment of introduced Argentine ants within the on-site and adjacent biological open space areas. In addition, human activity in the project area, during construction and throughout the life of the proposed project, may result in accumulation of trash and food, attracting predators that may prey on vireos and flycatchers, as well as increased frequency of intrusion into on-site and adjacent biological open space areas by both humans and domestic animals. Habitat degradation, as described above, would reduce the quality of designated vireo and flycatcher critical habitat.

5.4.3 Least Bell's Vireo Critical Habitat

Direct effects to designated vireo critical habitat with primary constituent elements for the vireo are expected from the permanent removal of approximately 22.66 acres of riparian vegetation. The proposed impacts would occur within the San Luis Rey River critical habitat area. Vireo critical habitat stretches from near Lilac Road in Pala, southwestward along the San Luis Rey River nearly to I-5 in the west, totaling approximately 656.1 acres within the entire length of the BSA. A total of approximately 114.16 acres of designated vireo critical habitat would be

affected directly or indirectly by the proposed project. This loss could reduce the amount of habitat available to vireos for breeding and foraging activities.

5.4.4 Southwestern Willow Flycatcher Critical Habitat

Direct effects to designated flycatcher critical habitat with primary constituent elements are expected from the permanent removal of approximately 18.33 acres of cottonwood willow riparian forest. The proposed impacts would occur within San Diego Management Unit of designated critical habitat. A total of approximately 337.32 acres of the segment of San Luis Rey River within the BSA is located in designated critical habitat for the flycatcher. A total of approximately 96.87 acres of designated flycatcher critical habitat would be directly or indirectly impacts by the proposed project. This loss could reduce the amount of habitat available for breeding and foraging activities.

5.4.5 Conservation Measures to Offset Impacts to Vireo and Flycatcher

Disturbance to riparian and wetland habitats would be offset through restoration/enhancement of riparian and wetland habitat at the Morrison parcel, creation at the Zweirstra property, and/or riparian creation/restoration at the Singh parcel. Depending on the option chosen, compensation would occur at either a 3:1 ratio (1:1 creation, 2:1 restoration/enhancement) or 5:1 for riparian and wetland vegetation. Under Option A, impacts to riparian and wetland vegetation would be offset at a 3:1 ratio through creation of riparian habitat at the Singh property and restoration/enhancement at Morrison. However, under Option B, 4.94 acres of impacts to cottonwood willow riparian forest would be offset at a 1:1 ratio through the purchase of credits at Pilgrim Creek, 3.4 acres would be offset at a 3:1 ratio through the 1:1 creation (3.4 acres) of habitat at Zweirstra, and 2:1 (6.8 acres) restoration/enhancement at Zweirstra (3.3 acres) and Morrison (3.5 acres). Impacts to 1.11 acres of mulefat, 0.13 acre of southern willow scrub, and 3.09 acres of coast live oak riparian forest would be offset through restoration/enhancement at Morrison. An additional 9.9 acres of permanent direct impacts would be offset at a 5:1 ratio through restoration/enhancement of 49.95 acres of riparian habitat at Morrison. Permanent direct impacts to 0.003 acre of disturbed wetland/giant cane would be offset at a 1:1 ratio through the restoration/enhancement of native habitat species at Morrison.

Potential indirect impacts to 16.72 acres of vireo and flycatcher habitat would be compensated at a 1:1 ratio (Table 3 and Table 8). A mitigation plan, outlining the details of the entire wetland and riparian preservation effort would be prepared and submitted to the appropriate resource agencies for review, with implementation following finalization of the document.

Temporary disturbance to 15.87 acres of vireo and flycatcher habitat would be offset through native revegetation of the impacted area (1:1 ratio) upon completion of the project. Temporary disturbance to cottonwood willow riparian forest, where this habitat contains the primary constituent elements for vireo, flycatcher and arroyo toad, would be offset though native revegetation of the area, as above, and would include restoration of similar habitat at the Morrison property at an additional 0.5:1 ratio, for a total 1.5:1 ratio. All seeding/planting would occur on-site and involve replacement with in-kind/similar, native species. Any graded habitat

(e.g., slopes, ROW) adjacent to the wildlife corridor would be revegetated with an appropriate, native plant mix. The proposed seed mix would be reviewed and approved by a qualified biologist prior to application in the field. The best methods of revegetation would be determined during design and could include hydroseeding, cuttings, planting, and possibly temporary irrigation. Riparian vegetation would require irrigation. Other measures to avoid/reduce project effects upon the vireo and flycatcher would involve restricting vegetation clearing from occurring during the breeding season.

All vegetation within the construction limits would be cleared outside the vireo/flycatcher breeding season (March 15 to September 15) to avoid/minimize impacts to breeding birds. If activities occur during the breeding season, then a pre-construction survey would be conducted to ensure that no nesting birds are present within the proposed work area. Should a bird nest site be located, then appropriate measures may include (but are not limited to) monitoring during grading and construction to ensure no impacts to the occupied site, designation of the location as an Environmentally Sensitive Area (ESA), and delaying/restricting project activities until nesting and fledging are complete. Pile driving would only be conducted between October 1 and February 14 to reduce noise affects to nesting/breeding birds within the project vicinity. During night construction, all project lighting would be directed onto the roadway or construction site and away from sensitive habitat. Light glare shield may also be used to reduce the extent of illumination into adjoining areas. Other direct and indirect impacts to flycatchers and/or vireos would be avoided and/or minimized through the implementation of conservation measures in this biological opinion.

To avoid and minimize impacts to vireo currently using portions of the Morrison property, no grading is proposed during restoration. Exotic plant species would be removed from the entire site outside the vireo and flycatcher breeding seasons and natives would be replanted to enhance the habitat on site for both vireo and flycatcher.

5.4.6 Summary of Impacts to Vireo and Flycatcher

Direct impacts to flycatcher and vireo and their designated critical habitats would occur as a result of the permanent loss of 22.66 acres of riparian and wetland vegetation suitable for vireo and flycatcher. An additional 15.87 acres of riparian and wetland vegetation would be temporarily impacted and approximately 75.63 acres would be affected by indirect impacts. No direct impacts to breeding flycatchers and vireos, their nests, eggs, or young are expected from construction activities. Direct and indirect effects would be avoided and/or minimized through implementation of the conservation measures in this biological opinion. A total of up to 23 pairs of vireo, 23 single vireos, and 1 migrant flycatcher may be harmed through direct and indirect affects to breeding and nesting habitat.

Impacts to designated vireo and flycatcher critical habitat would be off-set per the ratios set forth in the conservation measures and Tables 3-8 through the creation/restoration/enhancement of riparian habitat. Therefore, the ecological function of designated vireo and flycatcher critical habitat is expected to continue to provide connectivity and genetic interchange between significant vireo and flycatcher populations along the San Luis Rey River.

5.5 Coastal California Gnatcatcher and Critical Habitat

In general, the proposed actions are likely to result in adverse effects to the gnatcatcher through temporal and permanent removal of habitat and construction related noise. Vegetation clearing and grubbing associated with the project would occur outside of the gnatcatcher breeding season (February 15 through August 31) to avoid the potential for direct impacts to individual gnatcatchers.

5.5.1 Direct Impacts

The project would permanently impact approximately 37.64 acres and temporarily impact approximately 7.86 acres of gnatcatcher habitat within up to 3 territories (Tables 1-2). Disturbance would occur from project grading, pile driving, construction staging, equipment/materials storage, and vehicle access and parking.

5.5.2 Indirect Impacts

The proposed alignment may have approximately 48.82 acres of indirect effects on gnatcatcher habitat. For purposes of analysis, habitat within approximately 300 feet of the proposed alignment was assessed as being indirectly affected by noise, dust, increased artificial night lighting chemical and fuel leaks, soil erosion, increased non-native species plant intrusion, and excessive dust/noise levels could accidentally occur and reduce the quality of the native communities available to the gnatcatcher or cause harm/harassment to the species.

Noise and visual disturbance associated with construction activities may adversely affect gnatcatchers by disrupting breeding and foraging if activities occur during the breeding season. This could cause birds to frequently flush from the nest and endanger eggs, chicks, and adults. Flight from predators incurs an implicit cost in lost foraging time, where birds confronted with a predator at a nest face an explicit choice between loss of current reproduction versus total reproductive loss (Burhans and Thompson 2001). Noise from construction and road activities is a concern if it is at such a level that it masks intraspecific communication (Awbrey 1993, Awbrey *et al.* 1995). This level is generally accepted to be greater than 60 dBA hourly L_{eq}. Based on the noise analyses conducted (EDAW 2006), the project would have the net effect of increasing exposure to 60 dBA traffic noise across 32.29 acres of habitat suitable for the coastal California gnatcatcher.

5.5.3 Coastal California Gnatcatcher Critical Habitat

Approximately 162.53 acres of designated gnatcatcher critical habitat, including 94.32 acres of coastal sage scrub, would be affected directly or indirectly by the proposed project. This loss could reduce the amount of habitat available to gnatcatchers for breeding and foraging activities. The area to be directly disturbed as a result of the proposed action is approximately 0.17 percent (29.95 acres) of the approximately 17,325 acres of critical habitat unit 3 and approximately 0.38 percent (132.58 acres) of the approximately 34,705 acres within critical habitat unit 5.

Indirect effects, including increased invasive flora and fauna and increased human activity, are expected to occur to designated gnatcatcher critical habitat as a result of the proposed project. In some cases, exotic plants can out-compete and supplant native plants, changing the structure and floristics of the plant community upon which gnatcatchers depend. Furthermore, the increased irrigation required by many common landscaping species may provide suitable conditions for the establishment of introduced Argentine ants within the on-site and adjacent biological open space areas. In addition, human activity in the project area, during construction and throughout the life of the proposed project, may result in accumulation of trash and food, attracting predators that may prey on gnatcatchers, as well as increased frequency of intrusion into on-site and adjacent biological open space areas by humans and domestic animals. Habitat degradation, as described above, would reduce the quality of designated gnatcatcher critical habitat.

5.5.4 Conservation Measures to Offset Impacts to Gnatcatcher and its Critical Habitat

Compensation for permanent direct impacts to 24.36 acres of coastal sage scrub and 13.28 acres of disturbed coastal sage scrub would occur at a 2:1 ratio through preservation of 75.28 acres of coastal sage scrub. Permanent direct impacts to other native vegetation types (e.g., non-native grassland) within designated gnatcatcher critical habitat would be offset at the ratios specified in Tables 3-8. Potential indirect impacts to gnatcatcher habitat would be compensated at a 1:1 ratio through preservation of an additional 48.82 acres of coastal sage scrub. A total of approximately 124.10 acres of the approximately 180 acres of coastal sage scrub habitat at the Groves property would be preserved for this portion of the SR-76 realignment. The remaining approximately 55.9 acres of coastal sage on the Groves property would be available to offset impacts resulting from future projects (e.g., SR-76 East).

Temporary disturbance to potential gnatcatcher habitat would be offset through native revegetation of the area (1:1 ratio) upon completion of the project. All seeding/planting would occur on-site and involve replacement with in-kind/similar, native species, to the maximum extent practicable. Any graded habitat (e.g., slopes, ROW) adjacent to the wildlife corridor would be revegetated with an appropriate, native plant mix. The proposed seed mix would be reviewed and approved by a qualified biologist prior to application in the field. The best methods of revegetation would be determined during design and could include duff, hydroseeding, planting, and/or possibly irrigation.

All vegetation within the construction limits would be cleared outside the gnatcatcher breeding season (February 15 to August 31) to avoid/minimize impacts to breeding birds. If activities

occur during the breeding season, then a pre-construction survey would be conducted to ensure that no nesting birds are present within the proposed work area. Should a bird nest site be located, then appropriate measures may include (but are not limited to) monitoring during grading and construction to ensure no impacts to the occupied site, designation of the location as an ESA, and delaying/restricting project activities until nesting and fledging is complete. Pile driving would only be conducted between October 1 and February 14 to reduce noise affects to nesting/breeding birds within the project vicinity. During night construction, all project lighting would be directed onto the roadway or construction site and away from sensitive habitat. Light glare shield may also be used to reduce the extent of illumination into adjoining areas. Other direct and indirect impacts to gnatcatchers would be avoided and/or minimized through the implementation of conservation measures in this biological opinion.

5.5.5 Summary of Impacts to the Gnatcatcher and its Critical Habitat

Permanent direct impacts to gnatcatcher would affect approximately 37.64 acres of suitable habitat with temporary impacts to 7.86 acres and indirect impacts to 48.82 acres of gnatcatcher breeding and foraging habitat. No direct impacts to individual gnatcatchers, their nests, eggs, or young are expected from activities associated with the proposed project. Direct and indirect effects would be avoided and/or minimized through implementation of the conservation measures this biological opinion. A total of up to 6 pairs of gnatcatcher may be harmed through direct and indirect affects to potentially suitable breeding, nesting and foraging habitat.

Impacts to designated gnatcatcher critical habitat would be off-set per the ratios set forth in the conservation measures and Tables 3-8 through the preservation of upland habitat at the Groves property. Therefore, the ecological function of unit 3 and unit 5 of designated gnatcatcher critical habitat is expected to continue to provide connectivity and genetic interchange between significant gnatcatcher populations at MCB Camp Pendleton (adjacent to Unit 5), MSCP reserve areas in unit 1, and populations in northern San Diego County.

5.6 San Diego Ambrosia

5.6.1 Direct

Direct effects would occur from the removal of ambrosia from Caltrans' Marron Mitigation site for transplantation onto the Morrison site. Approximately 20 percent (approximately 9,686 square feet) of the 48,430 square foot ambrosia population on Marron would be harvested and transplanted to the Morrison property. The plants would be transplanted into an area of the Morrison property that has been dethatched and that is currently unoccupied by ambrosia but has the appropriate ecological characteristics.

5.6.2 Indirect

No indirect effects are expected to occur.

5.6.3 Conservation Measures to Offset Impacts to San Diego Ambrosia

Impacts to ambrosia would be avoided and ESA fencing installed around the locations to further ensure avoidance of the plants.

The translocation and long term management of ambrosia from the Marron Mitigation site to the Morrison property would follow a Service-approved plan. The translocation effort is beneficial to the species as it would expand the number of occupied and preserved ambrosia locations.

5.6.4 Summary of Impacts to San Diego Ambrosia

Impacts to ambrosia from translocation efforts would result in a net benefit to species by expanding its distribution into currently vacant habitat. Ambrosia would otherwise not be affected by the proposed project.

6. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act and, therefore, are not considered cumulative in the proposed project.

A wide range of activities, including urban development, flood control, highway, utility projects, and agricultural habitat conversions, will continue to affect the arroyo toad, vireo, flycatcher and gnatcatcher, and designated vireo, flycatcher, and gnatcatcher critical habitat in the future.

6.1 Illegal Grading

In recent years, there have been several incidents of illegal grading of gnatcatcher and arroyo toad upland habitat within northern coastal San Diego County communities. Illegal grading is expected to continue to occur, thereby affecting species, such as the gnatcatcher and arroyo toad, residing in the area. Unauthorized grading and filling of habitat would continue to affect the long-term viability of the species consulted on in this opinion.

6.2 Homeless Encampments

Human habitation is common in riparian areas, such as the San Luis Rey River, in urban and suburban San Diego County. As surrounding development and economic growth creates more demand for unskilled labor, it is anticipated that people who cannot afford conventional housing would continue to establish camps in native vegetation. This has the potential to impact arroyo

toads, vireo, flycatchers, gnatcatchers, and ambrosia through direct human disturbance, disturbance by pets, destruction of vegetation, attraction of scavengers that may prey on avian nests, and increased risk of fire.

6.3 San Luis Rey River Arson Fires

Between January and July 2007, approximately 40 arson related fires were set along the San Luis Rey River corridor. The fires were in the Fallbrook/Bonsall area between Loretta Street and Canyon Drive. Though fire is part of the natural system, unnatural fires occurring just before and during of the breeding season could have adverse effects on all the species being consulted on in this Opinion. Subsequently, post-fire pioneer plant species observed in 2007 appear to be dominated by giant reed (Roblek, Service, *pers. obs.*).

7. CONCLUSION

After reviewing the current status of the arroyo toad, flycatcher, vireo, gnatcatcher, and ambrosia, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the activities, as proposed, are not likely to jeopardize the continued existence or recovery of these species or result in the destruction or adverse modification of designated critical habitat for the gnatcatcher, vireo, or flycatcher for the following reasons.

7.1 Arroyo Toad

1. The arroyo toads that are likely to be harmed by the proposed action represent a very small portion of the range-wide population of this species. The project would impact approximately one (1) percent of the 8,669 acres of habitat that occurs within excluded critical habitat unit 14. The loss of this small percentage of habitat is not expected to reduce the function or connectivity of this unit should it be reconsidered and designated in the future.

2. The permanent loss of suitable upland is not large relative to the extent of habitat remaining over the arroyo toad's range and is not expected to significantly decrease the long-term viability of the arroyo toad.

3. Impacts to the arroyo toad would be avoided and minimized through the implementation of the conservation measures, as described in the project description.

7.2 Least Bell's Vireo and Southwestern Willow Flycatcher

1. The proposed action could harm up to 12 pairs and 12 individual vireos and 1 pair of flycatchers, a small portion of the range-wide populations of these species.

2. The permanent loss of 22.66 acres of vireo/flycatcher habitat is not large relative to the extent of habitat remaining over the vireo and flycatcher's range and is not expected to significantly decrease the long-term viability of the vireo and/or flycatcher.

3. Impacts to the vireo and flycatcher and their designated critical habitat would be minimized through the implementation of the conservation measures, as described in the project description.

7.3 Coastal California Gnatcatcher

1. The proposed action could harm up to 3 pairs of gnatcatcher, a small portion of the range-wide populations of this species.

2. The permanent loss of 37.64 acres of gnatcatcher habitat is not large relative to the extent of habitat remaining over the gnatcatcher's range and is not expected to significantly decrease the long-term viability of the gnatcatcher.

3. Impacts to gnatcatcher critical habitat would be minimized through the implementation of the conservation measures, as described in the project description.

7.4 San Diego Ambrosia

1. No more than 20 percent of the population at the Marron site would be harvested for transplantation to the Morrison site. Ambrosia at the Marron site has increased significantly since its transplantation.

2. Establishment of a new population on the Morrison property would increase the number of extant populations along the San Luis Rey River.

3. The Morrison property would be preserved and managed in perpetuity.

8. INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and 7(o)(2), taking that is incidental to and not intended as

part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary and must be undertaken by Caltrans so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity that is covered by this incidental take statement. If Caltrans (1) fails to assume and implement the terms and conditions or (2) fails to require to adhere to the terms and conditions of this incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

8.1 Amount or Extent of Take

The Service anticipates that it would be difficult to quantify the number of arroyo toads that would be affected by the proposed action for the following reasons:

1. The exact distribution and population size is difficult to estimate due to the dynamic conditions associated with their habitat. Suitable habitat may change during a given year or from year to year depending on climatic conditions, flooding, or other natural or human-related events (Service 1999a), which in turn influence female reproductive success and juvenile survival. Therefore, over the life of the project it is anticipated that the arroyo toad population subject to impacts from the proposed project would experience dynamic changes and population functions making it difficult to determine the number of arroyo toads that could be adversely affected at any given time.

2. Except during the early juvenile stage (first 4-5 weeks), arroyo toads forage at night and burrow during the day. Nocturnal activity is usually associated with rainfall and moderate temperatures and some nights of very high relative humidity (Service 1999a). Arroyo toads may be found in upland habitat up to 1 km (0.62 mi) from a known breeding area. Therefore, detection of arroyo toads outside of the breeding season is very difficult, with limited opportunities for anticipating when the species may be active. In addition, we currently do not have a reliable survey method for determining the locations or densities of arroyo toads that may be burrowed within upland habitat.

3. Finding dead or injured arroyo toads within the construction area is unlikely as the individuals may be underground during construction activities.

Nevertheless, we anticipate that no more than twenty (20) arroyo toads would be handled during translocation efforts and no more than five (5) arroyo toads taken as a result of project construction and operation. Due to the constraints described above, we acknowledge that the anticipated level of take in this biological opinion is not based on detailed arroyo toad population size/density information for the project area. However, we have identified this limit to provide for reinitiation of consultation per 50 CFR §402.16. The incidental take is expected to be in the

form of capture/collect for those found and relocated to outside of the project footprint and in the form of wound or kill (injury or death) for those that are not detected and remain in the project footprint.

The Service anticipates the following levels of take for the vireo and flycatcher could occur as a result of the proposed action:

> Up to 12 pairs and 12 individual vireos and 1 pair of flycatcher likely would be harmed by permanent direct impacts to 22.66 acres of vireo/flycatcher habitat, temporary direct impacts to 15.87 acres of vireo/flycatcher habitat, and indirect impacts to 75.63 acres of vireo/flycatcher habitat. We expect a portion of those birds affected to expand into other areas while the others may perish.

The Fish and Wildlife Service would not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. " 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of Federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

The Service retains the right to access and inspect the project site for compliance with the proposed project description of this biological opinion. If any federally listed species is determined to be present within the proposed activities footprint once construction has commenced, results should be disclosed immediately to the Service for possible reinitiation of consultation. In addition, any habitat destroyed that is not in the identified project footprint should be disclosed immediately to the Service for possible reinitiation of consultation. Compensation for such habitat loss would be requested at a minimum ratio of 5:1.

8.2 Effect of the Take

The Service anticipates that up to five arroyo toads, 12 pairs and 12 individual vireos, 1 pair of flycatchers, and 3 pairs of gnatcatchers could be taken as a result of the proposed action. In addition up to 20 arroyo toads could be handled/harassed during translocation efforts. In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the arroyo toad, vireo, flycatcher, gnatcatcher, or destruction or adverse modification of vireo, flycatcher, and gnatcatcher critical habitat. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. Caltrans must immediately provide an explanation of the causes of the taking and review with the Service the need for possible reinitiation of consultation.

8.3 Reasonable and Prudent Measures

The following reasonable and prudent measure is necessary and appropriate to minimize take of arroyo toad, gnatcatcher, vireo, and flycatcher:

> Take of arroyo toad, gnatcatcher, vireo, and flycatcher shall be avoided and minimized to the extent possible by project design and implementation of the conservation measures, as described in the project description of this biological opinion.

8.4 Terms and Conditions

To be exempt from the prohibitions of section 9 of the Act, Caltrans must comply with the following terms and conditions, which implements the reasonable and prudent measure described above. This term and condition is non-discretionary.

The following term and condition implements the reasonable and prudent measure:

> Caltrans shall ensure implementation and compliance with all conservation measures described in this biological opinion, which are hereby incorporated as terms and conditions of this biological opinion.

8.5 Monitoring Requirements

To be consistent with 50 CFR 402.14(i)3, Caltrans "…must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement." The reporting requirements are established in accordance with the conservation measures in the project description and 50 CFR 13.45 and 18.27. To receive coverage under this biological opinion, Caltrans must provide monthly reports and a project completion report of the estimated take that may have occurred in relation to the amount of take that is identified in this Incidental Take Statement. Annual reports are due prior to March 1st of each year for the duration of this project.

8.6 Reporting Requirements

The Service's Carlsbad Fish and Wildlife Office is to be notified within three working days should any endangered or threatened species be found dead or injured during this project. Notification must include the date, time, and location of the carcass, and any other pertinent information. Dead animals may be marked in an appropriate manner, photographed, and left on site. Injured animals should be transported to a qualified veterinarian. Should any treated animals survive, the Service should be contacted regarding the final disposition of the animals. The Service contact persons are Kurt Roblek and Janet Stuckrath. They may be contacted at the letterhead address or at (760) 431-9440.

Due to recent concerns and outbreaks associated with West Nile Virus or avian influenza, we recommend the following (adapted from guidelines[4] developed in consultation with the Centers for Disease Control and Prevention): Field biologists handling wild birds should at a minimum wear protective clothing, including coveralls, rubber boots, and latex or rubber gloves that can be disinfected or disposed. Wash hands with soap and water often and disinfect work surfaces and equipment between sites. Do not eat, drink, or smoke while handling animals. We recommend minimizing exposure to mucosal membranes by wearing protective eyewear (i.e., goggles) and a particulate surgical mask (NIOSH N95 respirator/mask is preferable). Decontaminate and properly dispose of potentially infectious material including carcasses.

9. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans or to develop information. The recommendations provided here do not necessarily represent complete fulfillment of the agency's 7(a)(1) responsibility for these species.

1. Provide informational signs to educate the public about conserving land for the arroyo toad, gnatcatcher, vireo, flycatcher, and ambrosia.

2. Provide bat roosting structure along other suitable structure in the Caltrans ROW within the San Luis Rey River floodplain.

For our office to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, we request notification of the implementation of any conservation recommendations.

10. REINITIATION NOTICE

This concludes formal consultation on the SR-76 Melrose Drive to South Mission Highway Improvement project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat

[4] These guidelines and recommendations are advisory in nature and intended to provide guidance for field biologists and others working with or handling wild birds with specific reference to highly pathogenic avian influenza. The guidance reflects information available as of August, 2005 and may be updated as more information becomes available. For more information, see USGS Field Guide to Wildlife Diseases: http://www.nwhc.usgs.gov/publications/field_manual/chapter_4.pdf

not considered in this opinion; or, (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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