# CHAPTER 2 PROJECT ALTERNATIVES

This section describes the proposed project and the range of alternatives. The alternatives were developed by a project development team (PDT) and through the National Environmental Policy Act (NEPA)/404 Memorandum of Understanding (MOU) integration process with federal, state, and local agencies in order to achieve the project's purpose and need. The alternatives under consideration are the Existing Alignment Alternative, the Southern Alignment Alternative, and the No Build Alternative. The Existing Alignment Alternative has been identified as the Preferred Alternative. The rationale for this identification is found in Section 2.2 below.

The proposed project is located in northern San Diego County on State Route 76 (SR-76) from Melrose Drive to South Mission Road. 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, nonstandard 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.

# 2.1 **PROJECT ALTERNATIVES**

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. 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 Existing Alignment Alternative minimizes impacts to sensitive coastal cage scrub habitat and Multiple Species Conservation Program (MSCP) lands, reduces impacts to upland habitats and their associated watersheds, and avoids a recently created wetland mitigation parcel (Marron, created in fall 2002, to mitigate impacts at the I-5/San Mateo Creek Bridge).

While the build alignment alternatives are both Conventional Highways, the designs vary with respect to project features, such as intersections, bridges, and right-of-way requirements.

## 2.1.1 <u>Common Design Features of the Build Alternatives</u>

The Existing Alignment Alternative and the Southern Alignment Alternative would construct SR-76 as a four-lane facility with right-of-way and grading to accommodate a possible future widening, if justified (Figure 2.1-1). Each alternative would require channelization lanes in some locations.

In the westbound and eastbound directions, there would be two lanes, each 3.6 meters (12 feet) wide. The westbound and eastbound lanes would be separated by 6.6 meters (22 feet), of which

3.0 meters (10 feet) in each direction would be paved inside shoulder. Separating the two directions of traffic would be a concrete barrier that is 0.6 meter (2 feet) wide. Each build alternative would construct 2.4-meter (8-foot) wide outside shoulders to provide for bicycles and pedestrians, while not precluding emergency parking.

Various utility facilities are located in the footprint of each of the build alternatives, including natural gas, telephone, television, water, and both overhead and underground electricity. Overhead and underground utilities within the project limits would require relocation. Typically, the utilities would be relocated within the proposed right-of-way but as far away from traffic lanes as possible. Overhead electrical facilities are generally less than 4 kV distribution lines on direct-bury wooden poles. No electrical facilities greater that 12 kV have been identified within the project limits. Underground facilities are typically relocated to new underground locations and overhead facilities to new overhead locations.

#### Nonstandard Design Features

#### Mandatory Standard Design Exceptions

For each of the build alternatives, Mandatory Design Exceptions would be required.

- Depending on the radius of curvature, the Highway Design Manual (HDM) requires roads to have a certain degree of cross slope. HDM Index 202.2 requires the use of Table 202.2 when determining the minimum superelevation (cross slope) for the specific radius of curve. This cross slope to radius relationship, as dictated, cannot be followed in all locations.
- There are requirements for minimum shoulder widths. HDM Index 302.1 requires the use of Table 302.1 when determining the minimum shoulder width. There are several locations where these minimum widths cannot be met.
- There is a requirement that the cross slope of a paved inside shoulder be a specific rate. HDM Index 302.2 (2) requires that left shoulders in depressed medians should be sloped at 2 percent away from the traveled way. This cannot be met in all locations.
- There is a requirement for minimum stopping sight distance for specific design speeds. HDM Index 201.1 requires that Table 201.1 shall be the minimum stopping sight distance. HDM Index 203.2 requires that the minimum curve radius is 400 meters (1,312 feet) for a design speed of 100 kilometers per hour (65 miles per hour). This minimum stopping sight distance cannot be met in all locations.

#### Advisory Standard Design Exceptions

For each of the build alternatives, Advisory Standard Design Exceptions would be required.

First, at all intersections on projects with new construction, it is a requirement that two pedestrian access ramps be installed at each corner. This comes from HDM Index 105.4. In certain conditions, this is not desirable as it (1) sets the stop bar well back from the intersection, (2) can cause a conflict with a light signal standard, or (3) can create two areas where pedestrians gather. Only one ramp would be installed at certain intersection corners.

Second, there are requirements regarding the placement of curbs in areas where cars shall be traveling in excess of 75 kilometers/hour (46 miles/hour); in this situation, they are not placed in areas where traffic exceeds this speed. This comes from HDM Index 303.1. In several locations, such as the intersections, curbs adjacent to the roadway must be placed to comply with the Americans with Disabilities Act (ADA).

Third, on projects with new construction, widening, or where slopes are otherwise being modified, embankment (fill) slopes should be constructed at a 1:4 (1 vertical for 4 horizontal) ratio or flatter. This comes from HDM Index 304.1. This suggested slope rate would substantially increase the footprint and the associated environmental impacts. Other measures have been integrated into the design to offset this advisory standard and the slopes would be steeper.

Fourth, the HDM advises that fixed objects (unyielding objects when hit by an errant vehicle) including bridge piers, abutments, retaining walls, and noise barriers that are within a certain distance from the edge of traveled way be eliminated, moved, redesigned to be made yielding, or shielded in accordance with the listed guidelines. This comes from HDM Index 309.1. It may not be possible to relocate all of the fixed objects farther than the suggested distance. Where engineering judgment dictates, fixed objects within the clear recovery zone would be shielded with guardrail, barrier rail, or some other similar device. This would require an exception.

The HDM advises that superelevation of compound curves should follow the procedure as shown in Figure 202.6. Where feasible, the criteria in Index 202.5 should apply. The HDM also advises that two-thirds of the superelevation runoff should be on the tangent and one-third within the curve. The project proposes widening and realignment of the existing SR-76 and these superelevation standards may not be met in all locations.

## 2.1.2 <u>Existing Alignment Alternative (Preferred Alternative)</u>

With the proposed Existing Alignment Alternative, the existing conventional highway would be expanded to four lanes, with right-of-way and grading to accommodate a possible future widening, if justified (see Figures 2.1-2a to 2.1-2h). The total roadway length for this alternative is approximately 9.4 kilometers (5.8 miles), with a right-of-way requirement of approximately 53 hectares (131 acres). This alternative provides a safe design and an economical construction cost while balancing impacts to the sensitive environmental resources and the private property located along the corridor.

The Existing Alignment Alternative includes the following design features and elements:

- The length of widening along SR-76 would be approximately 9.4 kilometers (5.8 miles). Roadway transitions from the existing highway to the Existing Alignment Alternative would begin approximately 0.8 kilometer (0.5 mile) west of the SR-76/Melrose Drive intersection and extend approximately 1.0 kilometer (0.6 mile) east of the SR-76/South Mission Road intersection.
- Earthwork quantities are estimated to be 1,375,000 cubic meters (1,810,000 cubic yards) of cut and 785,000 cubic meters (1,028,000 cubic yards) of fill. In an effort to minimize environmental impacts, 1:2 slopes or flatter would be used instead of the current 1:4 design standards.
- Channelization lanes would be provided at the following intersections: Melrose Drive, East Vista Way, Olive Hill Road, South Mission Road, and North River Road.
- The existing San Luis Rey River Bridge, which is 405 meters (1,328 feet) long and 13.3 meters (43.5 feet) wide, would remain to accommodate westbound traffic. A new bridge would be constructed to accommodate eastbound traffic. The bridges would be separated by a gap that varies between 15 and 25 meters (49 and 82 feet) in width.
- The new eastbound bridge would be 526 meters (1,725 feet) long and approximately 18 meters (60 feet) wide and would have two 3.6-meter (12-foot) through lanes, one 3.6-meter (12-foot) channelization lane, one 3.0-meter (10-foot) outside shoulder, and one 3.0-meter (10-foot) inside shoulder. Additionally, its columns, which would minimize impacts to wetlands/waters, would be circular and parallel to the river flow. It is expected that two columns would be needed at each support location.
- The existing Bonsall Creek Bridge is a double cell, reinforced concrete box (RCB) culvert that is approximately 7 meters (23 feet) long. The existing RCB structure would be demolished and a new bridge would be constructed. The new bridge would be approximately 7 meters (23 feet) wide and 72 meters (236 feet) long and would maintain four 3.6-meter (12-foot) travel lanes, two 3.6-meter (12-foot) channelization lanes, one 3.6-meter (12-foot) westbound right-turn lane, one 3.6-meter (12-foot) westbound left-turn lane, two 3.0-meter (10-foot) outside shoulders, one 3.0-meter (10-foot) inside shoulder, one 1.2-meter (4-foot) inside shoulder, and a 0.6-meter (2-foot) median barrier.
- The existing Ostrich Farm Creek Bridge is a four cell, RCB culvert that is approximately 14 meters (46 feet) wide. The existing RCB structure would be demolished and a new bridge would be constructed. It would be 14 meters (46 feet) long and 38 meters (125 feet) wide and would be constructed with four 3.6-meter (12-foot) through lanes, two 3.6-meter (12-foot) channelization lanes, two 3.6-meter (12-foot) eastbound left-turn lanes, two 3.0-meter (10-foot) outside shoulders, one 1.2-meter inside shoulder, one 3.0-meter (10-foot) inside shoulder, and a 0.6-meter (2-foot) concrete median barrier.

- At-grade, signalized intersections would be constructed at Melrose Drive, East Vista Way, North River Road, Via Montellano, Olive Hill Road, Thoroughbred Lane, and South Mission Road. New signalized intersections have been proposed at Via Montellano and Thoroughbred Lane, providing access directly to SR-76.
- Jeffries Ranch Road would be converted to a cul-de-sac due to the complex motorist movement necessary to access onto SR-76 and the proximity of Melrose Drive. Vehicle access to the highway would be provided via the connection from Old Ranch Road, Appaloosa Way, and Spur Avenue to Melrose Drive.
- Holly Lane would be converted to a right-in/right-out due to the complex motorist movement necessary to access SR-76 and the proximity of North River Road.
- The project design would be context-sensitive, thus recognizing the rural character of the adjacent communities. This would be achieved by constructing naturally appearing graded slopes, where feasible, that reflect pregraded contours or simulate natural terrain. Where space allows, undulating contour grading would be employed to minimize the typical straight cut and fill appearance of manufactured slopes. This method would soften the visual impact of long or high slope banks and reduce visual scarring of the existing terrain. Blasting and cutting of granite rock would be sculpted, to the extent possible, to also achieve a rough, natural-appearing surface.
- Design measures would be applied to ensure that wildlife movement is not adversely affected and road mortality is minimized (Figure 3.20-6). Roadways would provide wildlife crossings that would permit movement between habitats. Wildlife crossing design would provide suitable environmental conditions (soil, vegetation, lighting, and heights/width) to encourage use. Such crossings would include directional fencing and be located where natural landscape and habitat indicate probable directional wildlife movement.
- New roadway drainage systems would be placed at appropriate locations to channel on-site drainage. Existing off-site drainage systems would be upgraded or replaced pending current condition. The project would be designed in conformance with the National Pollutant Discharge Elimination System (NPDES) requirements. Best Management Practices (BMPs) should be utilized at various stages of the project. Approved treatment BMPs such as biofiltration devices should be utilized to the maximum extent possible to reduce the discharge of pollutants from Caltrans' storm drain system.
- 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 to provide for more gradual curves to accommodate a higher design speed or to accommodate widening if required in the future.

## **Construction Phasing**

Construction of the Existing Alignment Alternative would occur in three phases.

Phase 1 would be the portion from just west of Melrose Drive to East Vista Way. The intersection at East Vista Way would be constructed during this phase. There are no bridge structures within the Phase 1.

Phase 2 would be from Olive Hill Road to South Mission Road, with a taper section through Sweetgrass Lane. The intersection of Olive Hill Road and South Mission Road would be constructed during this phase, as would the taper to Sweetgrass Lane. The Bonsall Creek and Ostrich Farm Creek Bridges would be constructed during this phase.

Phase 3 would be the portion between East Vista Way and Olive Hill Road. The San Luis Rey River Bridge would serve eastbound traffic, and the signalized intersections at North River Road and Via Montellano would be completed. Via Montellano would connect to a future frontage road (Old SR-76) and would serve businesses in those areas.

Since construction would occur to widen an existing facility, traffic disruptions during construction are anticipated. Between Melrose Drive and Sweetgrass Lane, temporary stage detours along existing intersections would be required. Some delays may occur for short-term traffic handling. Because traffic control can be employed during the late night and early morning hours, construction could be conducted at night, as much as possible, to reduce traffic disruption.

The estimated cost of construction for the Existing Alignment Alternative (per a July 2008 estimate) is approximately \$244.2 million: construction (\$138 million), right-of-way (\$54.2 million), and support (\$52 million).

## 2.1.3 <u>Southern Alignment Alternative</u>

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, if justified. Just east of Camino Del Rey, the alignment would traverse the San Luis Rey River, via a new bridge, and connect to the existing SR-76/South Mission Road intersection (see Figures 2.1-3a to 2.1-3h). The total roadway length for this alternative is approximately 8.2 kilometers (5.1 miles) with a right-of-way requirement of approximately 148 hectares (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 Southern Alignment Alternative includes the following design features and elements:

- The length of widening would be approximately 8.2 kilometers (5.1 miles). Roadway transitions from the existing facility to the Southern Alignment Alternative would begin approximately 0.8 kilometer (0.5 mile) west of the SR-76/Melrose Drive intersection and extend to approximately 0.3 kilometer (0.2 mile) east of the SR-76/South Mission Road intersection.
- Preliminary earthwork quantities are currently estimated to be 2,500,000 cubic meters (3,270,000 cubic yards) of cut with 1,700,000 cubic meters (2,225,000 cubic yards) of fill. In an effort to minimize environmental impacts, 1:2 slopes or flatter would be used instead of the current 1:4 design standards.
- Channelization lanes would be provided at the following intersections: Melrose Drive, East Vista Way, Camino Del Rey, and South Mission Road.
- The existing Little Gopher Canyon Creek Bridge is a reinforced T-Beam structure that is 7.5 meters (25 feet) long and 6.1 meters (20 feet wide). The Southern Alignment Alternative would be located west of the existing bridge and a new structure would be constructed. This new bridge would be 42.6 meters (140 feet) wide and 14.5 meters (48 feet) long and would accommodate four 3.6-meter (12-foot) travel lanes, two 3.6-meter (12-foot) channelization lanes, one 3.6-meter (12-foot) right-turn lane (eastbound), two 3.0-meter (10-foot) outside shoulders, two 1.5-meter (5-foot) inside shoulders, and a 0.6-meter (2.0-foot) concrete median barrier.
- The Southern Alignment Alternative would span Moosa Canyon Creek and a bridge would be constructed. The Moosa Canyon Creek Bridge would be 250.5 meters (822 feet) long and 37.8 meters (124 feet) wide and accommodate four 3.6-meter (12-foot) travel lanes, two 3.6-meter (12-foot) channelization lanes, two 3.0-meter (10-foot) outside shoulders, two 1.5-meter (5-foot) inside shoulders, and a 0.6-meter (2-foot) concrete median barrier. Additionally, columns, which would minimize impacts to wetlands/waters, would centrally support the bridge.
- The Southern Alignment Alternative would traverse the San Luis Rey River and a bridge would be constructed. The South Mission Road Bridge would be 140.5 meters (461 feet) long and 39.6 meters (130 feet) wide and would accommodate three westbound 3.6-meter (12-foot) travel lanes, two eastbound 3.6-meter (12-foot) travel lanes, one 3.6-meter (12-foot) left-turn lane (eastbound), two 3.6-meter (12-foot) right-turn lanes (eastbound), two 3.0-meter (10-foot) outside shoulders, one 1.2-meter (4-foot) inside shoulder, one 3.0-meter (10-foot) inside shoulder, and a 0.6-meter (2.0-foot) concrete median barrier. Additionally, columns, which would minimize impacts to wetlands/waters, would centrally support the bridge.
- At-grade, signalized intersections would be constructed at Melrose Drive, East Vista Way, Little Gopher Canyon Road, Dentro De Lomas Road, Camino Del Rey, and South Mission Road.

- Jeffries Ranch Road would be converted to a cul-de-sac due to the complex motorist movement necessary to access onto SR-76 and the proximity of Melrose Drive. Vehicle access to the highway would be provided via the connections from Old Ranch Road, Appaloosa Way, and Spur Avenue to Melrose Drive.
- A fence between the San Luis Rey River and the Southern Alignment Alternative would be placed along the edge of the right-of-way in various locations.
- The project design would be context-sensitive, thus recognizing the rural character of the adjacent communities. This would be achieved by constructing naturally appearing graded slopes, where feasible, that reflect pregraded contours or simulate natural terrain. Where space allows, undulating contour grading would be employed to minimize the typical straight cut and fill appearance of manufactured slopes. This method would soften the visual impact of long or high slope banks and reduce visual scarring of the existing terrain. Blasting and cutting of granite rock would be sculpted, to the extent possible, to also achieve a rough, natural-appearing surface.
- Design measures would be applied to ensure that wildlife movement is not adversely affected and road mortality is minimized. Roadways would provide wildlife crossings that would permit movement between habitats. Wildlife crossing design would provide suitable environmental conditions (soil, vegetation, lighting, and heights/width) to encourage use. Such crossings would include directional fencing and be located where natural landscape and habitat indicate probable directional wildlife movement.
- New roadway drainage systems would be placed at appropriate locations to channel the onsite drainage. Existing off-site drainage systems would be upgraded or replaced pending current condition. The project would be designed in conformance with NPDES requirements. BMPs should be used at various stages of the project. Approved treatment BMPs such as biofiltration devices should be utilized to the maximum extent possible to reduce the discharge of pollutants from Caltrans' storm drain system.

The portions of the existing SR-76 roadway that would be relinquished to the County per a revised highway agreement are anticipated to function as a frontage road for existing property and business access. As a County road, it would be maintained by the County. Caltrans would coordinate with the County during design to ensure any relinquished roadways meet standards prior to relinquishment. Costs to improve the existing SR-76 to County design standards have not been identified.

## **Construction Phasing**

Construction of the Southern Alignment Alternative would occur in two phases.

Phase 1 is identical to Phase 1 of the Existing Alignment Alternative described above.

Phase 2 would be the construction of the Southern Alignment Alternative from East Vista Way to South Mission Road. During this phase, the signalized, at-grade intersections at East Vista Way, Little Gopher Canyon Road, Dentro De Lomas Road, Camino Del Rey, and South Mission Road would be constructed; a frontage road from Little Gopher Canyon Road to the Château View Development would be constructed, including the bridge over Little Gopher Canyon; direct access to/from SR-76 at Montrachet Road would be terminated and redirected to Little Gopher Canyon Road along the frontage road; and traffic on Montrachet Road would be redirected to the Little Gopher Canyon Road intersection for access to SR-76.

The estimated cost of construction for the Southern Alignment Alternative is approximately \$395 million dollars: construction (\$164 million), right-of-way (\$168.9 million), and support (\$62.3 million).

#### 2.1.4 <u>Transportation System Management (TSM) and Transportation Demand</u> <u>Management (TDM) Alternatives</u>

TSM strategies consist of actions that increase the efficiency of existing facilities without increasing the number of through lanes. TSM also encourages automobile, public and private transit, ridesharing programs, and bicycle and pedestrian improvements. TDM focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy.

Although TSM measures alone could not satisfy the purpose and need of the project, the measures described below have been incorporated into the build alternatives for this project.

Current transit service on SR-76 consists solely of NCTD Route 306, which provides service 20 times daily between the Vista City Hall and downtown Fallbrook, using the portion of SR-76 between East Vista Way and South Mission Road. Within the project limits, there are eight bus stops located in the following areas: eastbound SR-76, just north of North River Road; eastbound SR-76, south of Via Montellano; eastbound SR-76, north of Camino Del Rey; northbound South Mission Road, north of SR-76, in front of the River Village Center; southbound South Mission Road, just north of SR-76; westbound SR-76, south of Thoroughbred Lane; westbound SR-76, south of Via Montellano, in front of 30924; and westbound SR-76, north of Holly Lane. These bus stops would be maintained in place throughout construction and reconstructed in their current locations adjacent to the new highway project.

Bicycle travel is allowed on SR-76 for the entire length of the route. The proposed project would incorporate 2.4-meter (8-foot) roadway shoulders to accommodate pedestrians and bicyclists. Existing conditions would be maintained during construction.

# 2.1.5 <u>No Build Alternative</u>

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, which would cause longer delays and further degrade LOS. The No Build Alternative would not improve access for bikes and pedestrians. The No Build Alternative would not meet the Purpose and Need.

### 2.2 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

After full consideration of the technical studies prepared, and based on public and resource agency input, the Existing Alignment Alternative has been identified as the Preferred Alternative. Overall, it would have fewer impacts to biological resources, the San Luis Rey River floodplain, and to the community than the Southern Alignment Alternative, and it presents a more cost-effective solution to the project purpose and need.

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 Resort 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), when compared to 53 hectares (130 acres) for the Existing Alignment Alternative.

The Southern Alignment Alternative impacts 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 feet), and at 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 2.61 hectares (6.46 acres) with the Southern Alignment Alternative compared to 0.75 hectare (1.83 acres) with the Existing Alignment Alternative. Permanent impacts to waters of the State are approximately 11.1 hectares (32 acres) with the Southern Alignment Alternative, Alignment Alternative, compared to 6.62 hectares (16.35 acres) with the Existing Alignment

Alternative. 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, the 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 implementation of the Existing Alignment Alternative.

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

The Existing Alignment Alternative cost (per a July 2008 estimate) is estimated at \$225 million, while the cost of the Southern Alignment Alternative is estimated at \$395 million.

Along the Existing Alignment Alternative, the new roadway was placed to facilitate a comprehensive design. This alternative provides a safe design and a more economical construction cost while balancing impacts to the sensitive environmental resources and the private property along the corridor.

For further details on impacts, please see Table S.6-1 and Chapter 3.

# 2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER DISCUSSION

## 2.3.1 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. Between Melrose Drive and East Vista Way, the existing SR-76 would have been expanded to four lanes with right-of-way and grading to accommodate six lanes. Between East Vista Way and South Mission Road, SR-76 would have had three lanes on both sides of the river. This condition would have adversely impacted existing wildlife corridors by creating an island atmosphere around the river and possibly increasing animal fatalities as they try to access areas within the river basin. The Split Facility Alternative would have required nine bridges. Although they would have been narrower than the bridges proposed for the build alternatives, nearly double the number of bridges would have been required. These additional bridges increased the project's cost and the environmental impacts to the river. This alternative would have required out-of-direction travel and an additional structure

crossing the San Luis Rey River. The out-of-direction travel would possibly have increased response times for local fire, paramedics, and police depending on which side of the river they were responding. It was 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. The Split Facility Alternative would not meet the purpose and need as it would have required out-of-direction travel, it would have had substantial impacts to wildlife corridors, and it would have required many more bridges within the San Luis Rey River basin.

# 2.3.2 <u>Wetland Avoidance Alternative</u>

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 further outside of 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 to 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 type 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 9 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 (1,700 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. 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.

# 2.3.3 <u>The Groves Variation</u>

In response to an April 2005 request from the USFWS to move the Existing Alignment Alternative (near Olive Hill Road) farther north of the San Luis Rey River, Caltrans investigated a variation to the Existing Alignment Alternative between Via Montellano and South Mission Road. Two options to this variation were examined: the Bridge Option and the At-Grade Option. Under the Bridge Option, the Existing Alignment Alternative would have traveled up and over the large hill (Groves Hill) adjacent to SR-76 and southwest of Olive Hill Road and bridged Olive Hill Road. For this option to function, a standard urban diamond interchange would have been required to tie into the bridge over Olive Hill Road. This option was eliminated from further study based upon engineering and environmental factors. The Bridge Option could not have been built to Caltrans and FHWA geometric standards unless the Thoroughbred Lane intersection and direct access to the Bonsall Village Center were eliminated and an alternative to provide access was incorporated into the option. In addition to adding to the project's schedule, the additional bridgework, earthwork, and commercial property acquisition would have substantially increased its cost. This option would have dramatically altered the community nature of downtown Bonsall, would have had impacts to biological resources beyond those of the Existing Alignment Alternative, and would have impacted historic properties and 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 the Groves Hill would have generated 2.2 million cubic meters (3.0 million cubic yards) of excess fill material, the excavation of which would have added approximately \$ 41.5 million to the project's budget. The cut slopes produced by cutting into the 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.

# 2.4 PERMITS AND APPROVALS NEEDED

The permits listed in Table 2.4-1 below would be required. Caltrans shall continue to work closely with all of the resource agencies to maintain communication and coordination throughout the project development process and receipt of the various permits (See Chapter 5).

Agency	Permit/Approval	Status
United States Fish and Wildlife Service	Section 7 Consultation for Threatened and Endangered	<b>Biological Opinion</b>
	Species	received 10/1/08
United States Army Corps of Engineers	Section 404 Permit for dredged and fill waters of the U.S.	Pending
California Department of Fish and Game	1602 Streambed Alteration Agreement	Pending
California Water Resources Control Board	Section 401 Water Quality Certification	Pending
– Region 9		
County of San Diego	New Freeway Agreement to facilitate new intersections	Pending
	and the reconfiguration of existing intersections	
City of Oceanside	Modified Highway Access Agreement	Pending

Table 2.4-1Permits and Approvals Needed











Imagery: AirPhoto USA, acquisition date: 2006

NOTE: ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE SHOWN.

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

Figure 2.1-2a





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





Imagery: AirPhoto USA, acquisition date: 2006

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NOTE : ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE SHOWN.

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



**Proposed Existing Alignment (preferred) Alternative** 



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



NOTE: ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE SHOWN.

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Corridor

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





NOTE: ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE SHOWN. Figure 2.1-2g

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



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<u>Corridor</u>

NOTE: ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE SHOWN.

Figure 2.1-2h

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





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Imagery: AirPhoto USA, acquisition date: 2006

NOTE: ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE SHOWN. Figure 2.1-3a SR-76 Middle Project Features Map Proposed Southern Alignment Alternative









Figure 2.1-3b **SR-76 Middle Project Features Map Proposed Southern Alignment Alternative** 



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Proposed Temporary Impact Area Existing Right-of-Way Proposed Right-of-Way Proposed Cut and Fill Proposed Edge of Slope At-grade Signalized Intersection Proposed Removal  $\square$ Jurisdictional Boundary Noise Receptor Site

San Luis Rey River

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agery: AirPhoto USA, acquisition date: 2006



NOTE:

ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE SHOWN.



SR-76 Middle Project Features Map Proposed Southern Alignment Alternative





Imagery: AirPhoto USA, acquisition date: 2006

NOTE: ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE SHOWN.

#### LEGEND



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Proposed Alignment Proposed Temporary Impact Area Existing Right-of-Way Proposed Right-of-Way Proposed Cut and Fill Proposed Edge of Slope At-grade Signalized Intersection Proposed Bridge Structure Jurisdictional Boundary Noise Receptor Site

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Figure 2.1-3d SR-76 Middle Project Features Map Proposed Southern Alignment Alternative





magery: AirPhoto USA, acquisition date: 2006

NOTE: ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE SHOWN. Figure 2.1-3e SR-76 Middle Project Features Map Proposed Southern Alignment Alternative







Figure 2.1-3f SR-76 Middle Project Features Map Proposed Southern Alignment Alternative





nagery: AirPhoto USA, acquisition date: 2006



Figure 2.1-3g SR-76 Middle Project Features Map Proposed Southern Alignment Alternative





Imagery: AirPhoto USA, acquisition date: 2006

ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE SHOWN.

# LEGEND

Proposed Alignment
Proposed Temporary Impact Area
Existing Right-of-Way
Proposed Right-of-Way
Proposed Cut and Fill
Proposed Edge of Slope
At-grade Signalized Intersection
Proposed Bridge Structure
Noise Receptor Site

Figure 2.1-3h SR-76 Middle Project Features Map Proposed Southern Alignment Alternative

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Sheet 8 of 8 Scale1:3000 This page intentionally left blank.