

2.21 Cumulative Impacts

2.21.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

The California Environmental Quality Act (CEQA) Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts, under the National Environmental Policy Act (NEPA), can be found in 40 Code of Federal Regulations (CFR), Section 1508.7 of the Council on Environmental Quality (CEQ) Regulations.

2.21.2 Methodology

The potential for cumulative effects was evaluated by considering the direct and indirect effects of the proposed project and other past, present, or reasonably foreseeable future actions in the area to establish whether, in the aggregate, they could result in cumulative environmental effects. The cumulative effects analysis discussed in this section focuses on those issues and resources that would be affected by the aggregation of stress factors on the environment and does not address in detail those topics that would not have additional environmental effects from the cumulative condition. The analysis provided in this section considered the effects of the other

cumulative projects and the Build Alternatives in assessing whether a particular environmental parameter would experience cumulative adverse effects. Resource Study Areas (RSAs) for cumulative effects were identified for each environmental topic analyzed.

The following steps, based on the California Department of Transportation (Caltrans) “Guidance for Preparers of Cumulative Impact Analysis,”¹ were used as guidelines for identifying and assessing cumulative effects:

- Identify the resources to consider in the cumulative effect analysis by gathering input from knowledgeable individuals and reliable information sources. This process was initiated during project scoping and continued throughout the NEPA/CEQA analysis. The analyses provided earlier in Sections 2.1 through 2.20 were used as the basis for determining whether the Build Alternatives, after any required mitigation, would potentially contribute to cumulative effects. Resources for which the project is not expected to contribute to cumulative effects are listed in Table 2.21-1, provided following the last page of text in this section. Resources for which the project would or could contribute to cumulative effects are listed later in Section 2.21.4, Identification of the Resources Considered in the Cumulative Impact Analysis.
- Define the RSA for each resource to be addressed in the cumulative effect analysis. The RSAs are described by resource in Section 2.21.4.
- Describe the current health and historical context of each resource; this information is provided by resource in Section 2.21.4.
- Identify the direct and indirect effects of the proposed project that might contribute to a cumulative effect on the identified resources. This information is provided by resource in Section 2.21.4.
- Identify other current and reasonably foreseeable future actions or projects and their associated environmental effects to include in the cumulative effect analysis. The cumulative transportation and land development projects are approved and planned projects within approximately two miles (mi) of the project segment of Interstate 5 (I-5). Those projects are listed in Table 2.21-2, and the locations of the projects are shown on Figure 2.21-1. Figure 2.21-1 is provided following the last page of Table 2.21-2.

¹ http://www.dot.ca.gov/ser/cumulative_guidance/approach.htm; accessed January 22, 2013.

- Assess the potential cumulative effects and report the results of the cumulative impact analysis. This analysis is provided by resource in Section 2.21.4.
- Assess the need for additional avoidance, minimization, mitigation and/or recommendations for actions by other agencies to address a cumulative effect. This assessment is provided by resource in Section 2.21.4.

2.21.3 Identification of Cumulative Projects

As described earlier in Sections 2.1 through 2.20, construction and operation of the Build Alternatives would result in direct and indirect effects that could potentially contribute to cumulative effects to the built and natural environments when combined with the effects other related past, present, and reasonably foreseeable future actions. Recent and future actions in the general vicinity of the project segment of I-5 include:

- Planned transportation projects, including additional improvements to I-5 and other area freeways and arterials
- Residential and nonresidential development and transportation improvements in the Cities of San Juan Capistrano, Mission Viejo, Laguna Niguel, Laguna Hills, Laguna Woods, and Lake Forest, and areas in unincorporated Orange County

The future transportation projects were identified based on review of the following:

- Orange County Transit Authority (OCTA) Long Range Regional Transportation Plan (LRTP)
- 2012 Regional Transportation Plan
- Federal Transportation Improvement Program (FTIP)
- Transportation Corridor Agency Final Subsequent Environmental Impact Report for the South Orange County Transportation Infrastructure Improvement Project (SOCTIIP)

The future residential and nonresidential development is reflected in regionally adopted growth projections and in the General Plans for the incorporated cities listed above and in unincorporated Orange County. The future land development projects were identified based on review of:

- Available Specific Plans
- Other available development plans
- Local jurisdictions' General Plans
- City and other websites

As shown on Figure 2.21-1, the transportation and land use projects are within a large geographic area that encompasses all RSAs for resources of concern that could experience cumulative effects as a result of the Build Alternatives and other cumulative projects. These projects are in various phases (planning, design, and construction). The majority of the cumulative transportation and land use projects considered in this analysis are within approximately two mi of the Study Area. Two projects farther than two mi from the project segment of I-5 are included in Table 2.21-2 but are not shown on Figure 2.21-1. The Rancho Mission Viejo (RMV) Ranch Plan is an approved plan for the development of the approximately 22,800 acres (ac) of RMV property, which is approximately 3.5 mi east of the southern part of the project segment of I-5. The RMV Ranch Plan is the largest development plan in this part of Orange County and, as a result, was included in the cumulative projects. SOCTIIP is the proposed extension of the existing Foothill Transportation Corridor (FTC) from its existing terminus at Oso Parkway south to Pacific Coast Highway. The proposed extension of the FTC is parallel to and approximately three mi east of the southern part of the project segment of I-5. The FTC extension project is a major transportation project in south Orange County and, as a result, was included in the cumulative projects.

Not all of the projects listed in Table 2.21-2 would contribute to cumulative effects related to every environmental topical area. For example, not all of the projects would result in effects on biological resources. In addition, not all effects of an individual project listed in Table 2.21-2 would contribute to a cumulative effect. Some effects are very site-specific and would not contribute to cumulative effects associated with other projects. In other cases, short-term effects would not contribute to cumulative effects because construction of the cumulative projects and Build Alternatives, and the short-term effects of those construction activities would not occur in the same time period and/or in the vicinity of each other.

The identification and/or quantification of the potential effects of the individual projects and, as a result, potential cumulative effects, were not feasible for some effect topics. This is because either no environmental document has been prepared for those projects and, therefore, the potential effects of those projects are not known at this time, or the environmental documentation was not available at the time this cumulative impacts analysis was conducted. As a result, identification of potential effects of those projects would be speculative. Therefore, the cumulative impacts analyses include some qualitative judgments regarding the potential combined effects of the relationships among the projects in the RSA for each resource. In some cases,

avoidance, minimization, and/or mitigation of possible effects of other projects could reasonably be anticipated, based on the assumption that those projects would include measures similar to the measures included in this environmental document conducted for compliance with CEQA.

Construction of the selected Build Alternative is scheduled to begin in 2018 and be completed in 2022. It is possible that the following cumulative transportation projects listed in Table 2.21-2 could also be under construction over some or all of that four-year period:

- I-5/Marguerite Parkway interchange (Saddleback College Connection)
- I-5/Alicia Parkway interchange improvement
- I-5/Los Alisos Boulevard interchange
- SR-73 improvements

2.21.4 Identification of the Resources Considered in the Cumulative Impact Analysis

If a potential effect of the Build Alternatives related to a specific environmental topic is fully mitigated or offset, with no net effect, or if there are no effects related to that topic, then it was determined that there is no contribution to cumulative effects from the project for that topic and it is not discussed further in this section. The environmental topics for which the Build Alternatives would not contribute to cumulative effects are listed in Table 2.21-2, which includes discussion of why the Build Alternatives would not contribute to cumulative effects related to those topics.

Environmental topics for which the proposed project may contribute to cumulative effects are:

Human Environment

- Traffic/Transportation – Construction (Section 2.21.5.1)

Physical Environment

- Water Quality and Storm Water Runoff (Section 2.21.5.2)
- Paleontology (Section 2.21.5.3)
- Air Quality – Construction (Section 2.21.5.4)
- Noise – Construction (Section 2.21.5.5)

Biological Environment

- Natural Communities (Section 2.21.5.6)

- Animal Species (Section 2.21.5.7)
- Wetlands and Other Waters (Section 2.21.5.8)
- Threatened and Endangered Species (Section 2.21.5.9)
- Invasive Species - Construction (Section 2.21.5.10)

2.21.5 Cumulative Impacts Analysis

2.21.5.1 Traffic/Transportation – Construction

Resource Study Area for Traffic/Transportation

The RSA for evaluating the potential for cumulative short-term traffic effects during construction of the Build Alternatives and other cumulative projects focuses on the length of time a project would be under construction in a specific area. This area would include the roads and intersections in the vicinity of the construction zone, and other projects under construction in the same area. Cumulative short-term traffic effects could occur if a Build Alternative was under construction at the same time as other projects in the same area. As noted earlier, several transportation projects may be under construction at the same time as Alternative 2 or 3. The RSA includes the freeway and arterial streets in the vicinity of the sites for those projects, mainly in the City of Mission Viejo.

The RSA for short-term traffic effects includes the areas around individual ramps, intersections, and local streets when construction of Alternative 2 or 3 is occurring. Because construction would not occur along the entire alignment at one time, and consecutive ramps/interchanges would not be under construction at the same time, the RSA would shift over time as the construction activities move along the alignment. As a result, the individual ramps, intersections, and local streets on those freeway segments would experience short-term traffic effects when construction extends to each of those areas.

Effects of Alternative 2 (Preferred Alternative) and Alternative 3 Related to Traffic/Transportation

As discussed in Section 2.5, Traffic and Transportation/Pedestrian and Bicycle Facilities, construction of the Build Alternatives may result in temporary ramp and lane closures, detours, and increased travel times on the project segment of I-5. The detours may result in increased traffic volumes on area arterials. The short-term traffic effects during construction would be avoided and/or minimized through the implementation of the Transportation Management Plan (TMP) outlined in Measure TRA-1 identified in Section 2.5.

Effects of the Other Cumulative Projects Related to Construction Traffic/Transportation

During construction, the other cumulative transportation projects could also result in temporary ramp and lane closures, detours, increased travel times, and other effects on traffic and circulation similar to the effects under the Build Alternatives. It is expected that those transportation projects would also include the implementation of a TMP during construction. The largest proposed land development project in the area, the RMV Ranch Plan, could be under construction concurrently with the Build Alternatives. The site for the RMV Ranch Plan is approximately 3.5 mi east of the Study Area. As a result, it is unlikely that short-term traffic effects during construction of the RMV Ranch Plan would overlap with areas affected by the short-term traffic effects during construction of the Build Alternatives.

Potential for Cumulative Effects of Alternative 2 (Preferred Alternative) and Alternative 3 and the Other Cumulative Projects Related to Traffic/Transportation

As discussed above, several transportation projects may be under construction at the same time as the Build Alternatives that could result in cumulative short-term effects to traffic circulation. However, as discussed below, the TMP for the Build Alternatives would specifically address coordination of lane closures and detours required for the Build Alternatives with closures and detours for those other projects.

Potential Avoidance, Minimization, and/or Mitigation for the Project's Contribution to Cumulative Effects Related to Traffic/Transportation

The appropriate measure to address short-term traffic effects is a TMP specific to each project. A key component of most TMPs is appropriate coordination with local jurisdictions and area emergency service providers to ensure that traffic effects are minimized based on ongoing coordination and appropriate provision of signing and advance information to keep those parties informed as to the status of street, ramp, freeway, and lane closures; detours; and other conditions in the Study Area. In addition, to minimize the potential for short-term cumulative traffic effects, coordination of the TMPs with local jurisdictions for projects that are under construction concurrently would be required. No further measures would be necessary to address the potential contribution of the Build Alternatives to short-term cumulative traffic effects during construction.

2.21.5.2 Water Quality and Stormwater Runoff

Resource Study Area for Water Quality and Storm Water Runoff

The RSA for water quality is the same as the Study Area for the water quality analysis discussed in Section 2.9, Water Quality and Storm Water Runoff: the Newport Bay, Aliso Creek, and San Juan Creek Watersheds. The headwaters for watercourses flowing into Newport Bay, including San Diego Creek Reach 2, originate in the San Joaquin Hills and the foothills of the Santa Ana Mountains. The headwaters for Aliso Creek and San Juan Creek are in the Santa Ana Mountains foothills. San Diego Creek Reach 2, Aliso Creek, and Oso Creek are all currently listed on the State Water Resources Control Board, 2010 Integrated Report as impaired for one or more pollutants. Several beneficial uses have been identified for San Diego Creek Reach 2, Aliso Creek, and Oso Creek.

The Study Area is in the Irvine Groundwater Management Zone. Groundwater in the Study Area can be as close as six feet (ft) below the ground surface. Several beneficial uses have been identified for groundwater in this area.

Effects of Alternative 2 (Preferred Alternative) and Alternative 3 Related to Water Quality and Storm Water Runoff

The potential effects of construction activities on water quality focus primarily on sediments, turbidity, and pollutants such as phosphorus and pesticides and how these may effect water quality objectives and/or beneficial uses. Construction-related activities that are primarily responsible for sediment releases are related to exposing soils to potential erosion by rainfall/runoff and wind. Nonsediment-related pollutants of concern during construction include waste construction materials, chemicals, liquid products, petroleum products used in construction or the maintenance of heavy equipment, and concrete-related waste streams. During construction, the total disturbed areas are estimated at 132 ac for Alternative 2 and 137 ac for Alternative 3.

Under the Construction General Permit, the Build Alternatives would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP) and implement Erosion and Sediment Control Best Management Practices (BMPs) during construction. If Construction BMPs are properly designed, implemented, and maintained, no adverse water quality effects would occur during construction of the Build Alternatives.

Groundwater dewatering may be necessary to construct the bridge structure footings; groundwater may contain constituents, such as nutrients, that could exceed the water quality objectives of downstream water bodies. Groundwater and any other nonstorm

water dewatering activities are subject to the requirements of the De Minimus Permit (Order Number R8-2004-0021, or Order Number R-9-2008-0002). The groundwater dewatering permit would require monitoring of dewatering discharges and adherence to effluent and receiving water limitations to protect the water quality of surface waters.

Alternatives 2 and 3 would permanently increase the impervious surface area by 23 and 33 ac, respectively, compared to the existing freeway facilities. The increase in impervious areas would cause a long-term increase in velocity at outlets and the amounts of pollutants typically generated by operating and maintaining a transportation facility. Pollutants of concern during operation of a transportation facility include sediments, trash, debris, petroleum products, metals, nutrients, solvents, waste paint, herbicides, and pesticides. Increased impervious areas associated with urbanizing development increase the volume of runoff during a storm, which more effectively transports pollutants to receiving waters and may lead to adverse effects on water quality and downstream erosion.

Currently, storm water runoff from I-5 within the Study Area is treated by only one bioswale within the northbound loop on-ramp from La Paz Road. Treatment Control BMPs and Design Pollution Prevention BMPs would be incorporated into the design of the Build Alternatives to target the constituents of concern in the storm water runoff from the freeway facilities and would address general purpose pollutant removal because the receiving waters are impaired for sediment, metals, nutrients, toxics, and bacteria.

Measures WQ-1 through WQ-5, identified in Section 2.9, would avoid and/or minimize the effects of the Build Alternatives related to water quality.

Effects of the Other Cumulative Projects Related to Water Quality and Storm Water Runoff

The cumulative projects in Table 2.21-2 are all anticipated to result in increases in impervious areas in the RSA and in storm water and other runoff from those project sites during construction and operation. That water may include a number of pollutants of concern. The cumulative projects would be required to provide for control and treatment of storm water and other runoff on those project sites prior to discharge of the water off site. Those controls would include a wide range of BMPs during both construction and operations.

Potential Cumulative Effects of Alternative 2 (Preferred Alternative) and Alternative 3 and the Other Cumulative Projects Related to Water Quality and Storm Water Runoff

The Build Alternatives and the cumulative projects would result in a cumulative increase in impervious surfaces in the RSA and in the amount of storm water and other runoff from the sites of all the projects. That water could include a wide range of pollutants of concern. Even with construction and operational BMPs, there is no certainty that 100 percent of all new storm water and other runoff from those sites would be captured and treated prior to release off site. As a result, in the long-term, the Build Alternatives and the other cumulative projects may contribute to a cumulative adverse effect on water quality in the Newport Bay, Aliso Creek, and San Juan Creek Watersheds.

Potential Avoidance, Minimization, and/or Mitigation for the Project's Contribution to Cumulative Effects Related to Water Quality and Storm Water Runoff

As noted above, the Build Alternatives and the other cumulative projects would be required during both construction and operations to capture and treat storm water and other runoff prior to discharge off the project site. Nonetheless, the Build Alternatives and the other cumulative projects would contribute to a cumulative adverse effect on water quality in the Newport Bay, Aliso Creek, and San Juan Creek Watersheds because there is no certainty that 100 percent of all new storm water and other runoff generated in the RSA during construction and operation of those projects can be captured and properly treated prior to release off site. This potential cumulative adverse effect on water quality in the RSA would be minimized based on implementation of BMPs and compliance with applicable National Pollutant Discharge Elimination System (NPDES) Permit conditions and other water quality regulations by the Build Alternatives and the other cumulative projects. Therefore, no further avoidance, minimization, and/or mitigation measures are required to address the contribution of the Build Alternatives to cumulative effects related to water quality and storm water runoff.

2.21.5.3 Paleontology

Resource Study Area for Paleontology

As discussed in Section 2.11, Paleontology, the Study Area is near the border of the northern Peninsular Ranges Geomorphic Province and the south-central part of the Transverse Range Geomorphic Province of Southern California. The Study Area is on the east end of the San Joaquin Hills, which are a coastal extension of the Santa Ana

Mountains. Exposed formations in the San Joaquin Hills have a combined thickness of 22,000 ft and range in age from the Paleocene to the Late Pleistocene. The San Joaquin Hills consist of both marine and terrestrial sediments and intrusive igneous rocks.

The RSA for paleontological resources was defined to include the San Joaquin Hills and the areas on the inland side of I-5, in the Peninsular Ranges and Transverse Range Geomorphic Provinces.

Effects of Alternative 2 (Preferred Alternative) and Alternative 3 Related to Paleontology

As discussed in Section 2.11, there are areas of high paleontological sensitivity within the disturbance limits for the Build Alternatives. Sediments in the Old Alluvium, Very Old Axial Channel Deposits, Very Old Alluvial Fan Deposits, Niguel Formation, and Capistrano Formation have the potential to contain significant, nonrenewable paleontological resources, and it is likely that paleontological localities would be encountered during excavation for the Build Alternatives. Construction of the Build Alternatives would result in permanent adverse effects as a result of damage to or removal of paleontological resources in excavated areas. Measure PAL-1, identified in Section 2.11, avoids and/or minimizes the Build Alternatives' effects on paleontological resources.

Effects of the Other Cumulative Projects Related to Paleontology

Any of the cumulative projects in the RSA that include excavation that extends into sediments or other areas of high or moderate paleontological sensitivity would result in permanent adverse effects to paleontological resources similar to the effects of the Build Alternatives. As shown in Table 2.21-2, many of the cumulative projects are expected to result in adverse effects to paleontological resources requiring mitigation.

Potential for Cumulative Effects of Alternative 2 (Preferred Alternative) and Alternative 3 and the Other Cumulative Projects Related to Paleontology

Each project in the RSA that includes excavation that extends into sediments or other areas of high or moderate paleontological sensitivity would contribute to a permanent adverse effect related to the loss and/or damage of nonrenewable paleontological resources. Those effects would be only partially mitigated based on required appropriate fieldwork; monitoring during construction; and specimen collection, identification, and curation. However, the effects of the Build Alternatives and the

other cumulative projects would result in a net loss of paleontological resources in the RSA because the mitigation for the effects on the affected resources would not create new paleontological resources to replace the affected resources. As a result, the Build Alternatives and the other cumulative projects would contribute to a permanent cumulative adverse effect related to paleontological resources in the RSA.

Potential Avoidance, Minimization, and/or Mitigation for the Project's Contribution to Cumulative Effects Related to Paleontology

There are no avoidance, minimization, and/or mitigation measures that would replace paleontological resources affected by the Build Alternatives and the other cumulative projects. However, the Build Alternatives and most of the cumulative projects would require preconstruction fieldwork to identify potential areas of paleontological resources; measures during construction in areas identified as sensitive for paleontological resources; and the collection, identification, and curation of specimens from the affected sediments and formations. These activities would partially reduce effects to paleontological resources. However, because the effects are permanent even with these measures, the Build Alternatives would incrementally contribute to cumulative adverse effects to paleontological resources in the RSA. No further measures are required to address the effects of the Build Alternatives on paleontological resources.

**2.21.5.4 Air Quality – Construction
Resource Study Area for Air Quality**

The RSA for air quality during construction is focused on the active construction areas for the Build Alternatives and active construction areas for other projects in the vicinity of the Study Area that are expected to be under construction at the same time as the proposed project.

Effects of Alternative 2 (Preferred Alternative) and Alternative 3 Related to Short-Term Air Quality

As discussed in Section 2.13, Air Quality, short-term degradation of air quality during construction of the Build Alternatives may occur due to the release of particulate emissions (airborne dust) generated by construction activities and emissions from construction equipment, including carbon monoxide, nitrogen oxides, volatile organic compounds, directly emitted particulate matter, and toxic air contaminants such as diesel exhaust particulate matter. Measures AQ-1 through AQ-5, identified in Section 2.13, would avoid and/or minimize short-term air quality effects during construction of the Build Alternatives.

Effects of the Other Cumulative Projects Related to Short-Term Air Quality

Construction of the other cumulative projects shown in Table 2.21-2 would also result in short-term air quality effects associated with fugitive dust and construction equipment emissions. As described earlier in Section 2.21.3, Identification of Cumulative Projects, four transportation projects could be under construction at the same time as the Build Alternatives. Those four projects and the Build Alternatives have the potential to contribute to cumulative adverse short-term air quality effects related to construction activities.

The quantity and severity of those effects would be related to the amount of soil disturbed, the types and numbers of pieces of construction equipment, weather conditions, and other factors specific to each project. The four cumulative projects would be required to comply with the applicable SCAQMD rules as well as local jurisdictions' requirements for dust and emission controls during construction. In addition, all projects on State highways are required to comply with the Caltrans Standard Construction Specifications, Sections 10 and 18 (dust control) and 39-3.06 (asphalt concrete plant emissions). All construction material hauling is required to comply with California Vehicle Code (CVC) Section 23114 to avoid material spilling on public roads.

Potential for Cumulative Effects of Alternative 2 (Preferred Alternative) and Alternative 3 and the Other Cumulative Projects Related to Short-Term Air Quality

With construction of the Build Alternatives and the potential for the four other cumulative projects occurring concurrently and in proximity to each other, there is potential for cumulative effects related to short-term fugitive dust and construction equipment emissions in the RSA. The cumulative short-term air quality effects of the Build Alternatives and the four other cumulative projects could be substantial, depending on the specific construction activities on any specific day, weather and climatic conditions, and other factors. Therefore, the Build Alternatives have the potential to contribute to cumulative short-term air quality effects in the RSA during construction, even with minimization measures.

Potential Avoidance, Minimization, and/or Mitigation for the Project's Contribution to Cumulative Effects Related to Short-Term Air Quality

As noted above, the Build Alternatives include avoidance and/or minimization measures to address short-term dust and equipment emissions. These types of

measures are typically required of most major construction projects in the South Coast Air Basin by the SCAQMD, Caltrans, and/or the local jurisdictions. As a result, the potential adverse short-term cumulative air quality effects of the Build Alternatives and the four other cumulative projects that have the potential to be constructed concurrently would be avoided and/or minimized based on compliance with SCAQMD regulations and other applicable requirements for dust and equipment emissions control. Therefore, no further measures are required to address the Build Alternatives' contribution to short-term cumulative adverse air quality effects.

2.21.5.5 Noise – Construction Resource Study Area for Noise

The RSA for noise was defined as the sensitive receptors within the Study Area and in the vicinity of the other cumulative projects.

Effects of Alternative 2 (Preferred Alternative) and Alternative 3 Related to Construction Noise

As discussed in Section 2.14, Noise, short-term construction-related worker commutes and equipment transport noise effects would be minimal compared to existing traffic volumes on I-5 and other area streets, and the traffic noise effects of those trips would not be substantial. However, noise associated with the use of construction equipment is estimated to be between 79 and 89 A-weighted decibels (dBA) maximum instantaneous noise level (L_{max}) at a distance of 50 ft from the active construction area during grading. The worst-case composite noise level at the nearest residence during grading would be 91 dBA L_{max} at a distance of 50 ft from an active construction area. The closest residences along I-5 are within 50 ft of the project construction areas associated with the Build Alternatives. Therefore, these receptors may be subject to short-term noise reaching 91 dBA L_{max} or higher generated by the construction activities associated with the Build Alternatives.

Measure N-1, identified in Section 2.14, would avoid and/or minimize short-term construction noise associated with the Build Alternatives.

Effects of the Other Cumulative Projects Related to Construction Noise

Construction activities for the other cumulative projects would result in noise levels similar to the levels generated during construction of the Build Alternatives. Where there are noise-sensitive receptors in the vicinity of the cumulative projects, those noise levels could reach 91 dBA L_{max} or higher at those receptors.

Potential for Cumulative Effects of Alternative 2 (Preferred Alternative) and Alternative 3 and the Other Cumulative Projects Related to Construction Noise

As noted earlier, there is potential for four transportation projects to be under construction at the same time as the Build Alternatives. As a result, sensitive receptors within the Study Area and near State Route 73 (SR-73) could experience construction noise from one or more projects concurrently. The Build Alternatives and the cumulative projects may contribute to cumulative short-term adverse construction-related noise effects on adjacent sensitive receptors.

Potential Avoidance, Minimization, and/or Mitigation for the Project's Contribution to Cumulative Effects Related to Noise

Potential cumulative construction noise impacts associated with non-Caltrans projects would be minimized by compliance with applicable jurisdictional regulations. Projects within Caltrans right of way will be required to comply with the Caltrans Standard Specifications. As a result, those short-term noise effects would be avoided and/or minimized. No further measures are required to address the contribution of the Build Alternatives to cumulative adverse short-term noise effects.

2.21.5.6 Natural Communities

Resource Study Area for Natural Communities

As discussed in Section 2.15, Natural Communities, the Biological Study Area (BSA) includes the maximum area of potential effect along the entire length of the Study Area (6.5 mi) and extends beyond the maximum area of potential direct effect where necessary to identify sensitive biological resources within and immediately adjacent to the Study Area. There are a limited number of natural communities in the Study Area Cities and unincorporated areas. The RSA for biological resources includes the BSA and other areas in the adjoining cities where there is potential for natural communities and other biological resources due to the cumulative projects listed in Table 2.21-2.

Effects of Alternative 2 (Preferred Alternative) and Alternative 3 Related to Natural Communities

There are two natural communities of special concern in the BSA:

- **Riparian/Riverine Habitats:** These occur primarily on the west side of I-5 between Crown Valley Parkway and Oso Parkway, and between Alicia Parkway

and Los Alisos Boulevard. These riparian areas are degraded by nonnative invasive species and human encroachment and are of poor to moderate quality.

- **Coastal Sage Scrub:** Coastal sage scrub (CSS) occurs on the west side of I-5, just south of the Oso Parkway overcrossing, and north of the Alicia Parkway overcrossing. This CSS habitat is highly degraded, and the overall quality is poor.

Other than bands of the riparian/riverine habitat that may be used for wildlife movement, there are no wildlife corridors in the BSA.

Alternatives 2 and 3 would result in temporary effects to 0.7 and 2.08 ac, respectively, of riparian habitats. The Build Alternatives would not result in any direct temporary effects to CSS, but there may be minimal indirect temporary effects to CSS due to increased traffic and noise during construction in the vicinity of CSS.

The Build Alternatives would each result in direct permanent effects to 0.18 ac of riparian habitat through disturbance and/or removal of existing vegetation and would not result in direct permanent effects to CSS. Permanent indirect project effects (such as noise) to CSS and riparian habitats are not expected to exceed existing conditions, although those effects are expected to extend into the surrounding natural habitats by approximately the same distance that I-5 is being widened. Site Design, Source Control, and Treatment BMPs would be incorporated into the Build Alternatives to avoid and minimize potential indirect adverse effects to CSS and riparian habitats due to increased traffic, noise, and impervious surfaces.

Measures BIO-1 through BIO-5 have been identified in Section 2.15 to avoid and/or minimize effects to CSS and riparian habitats associated with the Build Alternatives.

Measures BIO-6 through BIO-9, identified in Section 2.15, avoid and/or minimize effects to riparian habitats associated with the Build Alternatives.

Effects of the Other Cumulative Projects Related to Natural Communities

As shown in Table 2.21-2, most of the cumulative projects for which environmental effect information was available would result in effects on natural communities that are less than substantial or less than substantial with mitigation. Avoidance and/or minimization measures for those effects would be similar to the types of measures included in the Build Alternatives. Mitigation measures would be implemented, as applicable, for the cumulative projects listed in Table 2.21-2. A few cumulative

projects would result in no effects to natural communities. None of the cumulative projects would result in unavoidable adverse effects on natural communities.

Potential for Cumulative Effects of Alternative 2 (Preferred Alternative) and Alternative 3 and the Other Cumulative Projects Related to Natural Communities

As noted above, the Build Alternatives would result in temporary and permanent direct and indirect effects on riparian habitats and temporary and permanent indirect effects on CSS. The other cumulative projects may also result in temporary and/or permanent direct and/or indirect adverse effects on riparian and CSS habitats. Those effects would be limited because there is only limited riparian and CSS habitat in areas adjacent to I-5. As a result, the Build Alternatives would result in a nominal contribution to cumulative adverse effects on riparian and CSS habitats.

Potential Avoidance, Minimization, and/or Mitigation for the Project's Contribution to Cumulative Effects Related to Natural Communities

As described above, the Build Alternatives include measures to address their effects on natural communities. Any of the cumulative projects that would affect natural communities would also be expected to include avoidance, minimization, and/or mitigation measures to address those effects. As a result, the potential contribution of the Build Alternatives to short- and long-term cumulative adverse effects on natural communities would be avoided and/or minimized. Therefore, no further measures are required to address the Build Alternatives' contribution to cumulative adverse effects on natural communities.

2.21.5.7 Animal Species

Resource Study Area for Animal Species

As discussed in Section 2.18, Animal Species, the BSA supports suitable habitat for a variety of special-status wildlife species. These species are perceived as having declining populations or local populations that are sparse, rapidly dwindling, or otherwise unstable. In addition, native bird species and their nests are protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code 3503, 3505.5, and 3800. The special-interest animal species potentially occurring or known to occur in the BSA are listed in Table 2.18-2, including information on the types and ranges of habitats occupied by those species.

The RSA for animal species is defined as I-5 and the adjoining cities. Because there are limited natural communities in the Study Area Cities and unincorporated areas, special-interest animal species are also limited in the Study Area.

Effects of Alternative 2 (Preferred Alternative) and Alternative 3 Related to Animal Species

Special-status animal species with the potential to occur in CSS habitat in the BSA are orange-throated whiptail, northern red-diamond rattlesnake, San Diego horned lizard, coast patch-nosed snake, Costa's hummingbird, Lawrence's goldfinch, loggerhead shrike, Allen's hummingbird, and San Diego desert woodrat.

Special-status animal species with the potential to occur in riparian/riverine habitats in the BSA are monarch butterfly, arroyo chub, southwestern pond turtle, silvery legless lizard, orange-throated whiptail, coastal western whiptail, San Bernardino ring-necked snake, San Diego horned lizard, coast patch-nosed snake, two-striped garter snake, Cooper's hawk, tricolored blackbird, great blue heron, Lawrence's goldfinch, California yellow warbler, yellow-breasted chat, loggerhead shrike, black-crowned night heron, Nuttall's woodpecker, Allen's hummingbird, western red bat, hoary bat, and western yellow bat.

Special-status animal species with the potential to occur in grassland and open habitats (sometimes classified as "ruderal") in the BSA are western spadefoot, silvery legless lizard, coastal western whiptail, northern red-diamond rattlesnake, San Diego horned lizard, merlin, loggerhead shrike, and Allen's hummingbird.

Although most of these species were not observed in the BSA and most of these habitats in the BSA are disturbed, developed, or degraded by infestations of nonnative species, there is some suitable habitat for these species in the BSA.

Special-status bridge- and crevice-dwelling bat species with the potential to occur in the BSA include pallid bat, western mastiff bat, hoary bat, western small-footed myotis, Yuma myotis, and big free-tailed bat. Although none of these species were observed in the BSA during the survey conducted in 2012, at least one species of myotis was documented in the BSA; that myotis species could not be identified at the time of the survey. There is suitable roosting and foraging habitat in the BSA for all the special-status bat species. Therefore, the presence of special-status bat species in the BSA is presumed.

The Build Alternatives would result in temporary effects to special-status riparian/riverine animal species due to a loss of 0.7 and 2.08 ac, respectively, of riparian/riverine habitat. The Build Alternatives would result in indirect temporary effects to special-status animal species that use CSS and riparian/riverine habitats due to increased traffic and noise during construction in the vicinity of those habitats. The Build Alternatives are not expected to temporarily affect special-status grassland and open habitat animal species.

The Build Alternatives would result in temporary effects to bridge- and crevice-dwelling species during construction, including temporary indirect disturbance (such as noise, dust, night lighting, and human encroachment), which is a minor temporary effect on access to roost sites.

The Build Alternatives would not result in direct permanent effects to special status animal species in CSS or grassland and open habitats. The Build Alternatives would each result in direct permanent effects to 0.18 ac of riparian habitat through disturbance and/or removal of existing vegetation. Permanent indirect project effects (such as noise) to special status animal species in CSS and riparian habitats are not expected to exceed existing conditions, although those effects are expected to extend into the surrounding natural habitats by approximately the same distance that I-5 is being widened. Site Design, Source Control, and Treatment BMPs would be incorporated into the Build Alternatives to avoid and/or minimize potential indirect adverse effects to CSS and riparian habitats due to increased traffic, noise, and impervious surfaces. Additionally, as outlined in Section 2.21.5.8, Wetlands and Other Waters, Measure BIO-11, permanent effects to riparian/riverine habitat would be compensatorily mitigated, if required, through the Measure M2 Freeway Transportation Mitigation Program.

The Build Alternatives are not expected to substantially affect the long-term use of crevices and other areas in freeway structures and would result in limited indirect effects to bridge- and crevice-dwelling animal species.

Measures BIO-1 through BIO-9 (identified in Section 2.15) and BIO-12 through BIO-14 (identified in Section 2.18) avoid and/or minimize effects to special-status animal species.

Effects of the Other Cumulative Projects Related to Animal Species

As shown in Table 2.21-2, most of the cumulative projects for which environmental effect information was available would result in effects on animal species that are less

than substantial or less than substantial with mitigation. Avoidance, minimization, and/or mitigation for those effects would be similar to the types of measures included in the Build Alternatives. A few cumulative projects would result in no effects to animal species. None of the cumulative projects would result in substantial unavoidable adverse effects on animal species.

Potential for Cumulative Effects of Alternative 2 (Preferred Alternative) and Alternative 3 and the Other Cumulative Projects Related to Animal Species

As noted above, the Build Alternatives would result in temporary and permanent direct and indirect effects on animal species. The other cumulative projects may also result in temporary and/or permanent direct and/or indirect adverse effects on animal species. Those effects would be limited because there is only limited habitat for special-interest animal species in the areas adjacent to I-5. As a result, the Build Alternatives would result in only a minor contribution to cumulative adverse effects on special-interest animal species.

Potential Avoidance, Minimization, and/or Mitigation for the Project's Contribution to Cumulative Effects Related to Animal Species

As described above, the Build Alternatives include measures to address their effects on special-interest animal species. Any of the cumulative projects that would affect natural communities would also be expected to include avoidance, and/or minimization, measures to address those effects. As a result, the contribution of the Build Alternatives to potential short- and long-term cumulative adverse effects on animal species would be avoided and/or minimized. No other measures are required to address the Build Alternatives' contribution to cumulative adverse effects on animal species.

2.21.5.8 Wetlands and Other Waters

Resource Study Area for Wetlands and Other Waters

The RSA for protected waters is the San Juan Creek Watershed, which extends across approximately 113,000 ac. Main stem water courses in that Watershed include San Juan, Chiquita, Gobernadora, Cristianitos, La Paz, Gabino, and Talega Creeks. Oso Creek, which crosses the Study Area, is part of the main stem system in the San Juan Creek Watershed. Aliso Creek, which crosses the Study Area, is part of the Aliso Creek Watershed.

Effects of Alternative 2 (Preferred Alternative) and Alternative 3 Related to Wetlands and Other Waters

As discussed in Section 2.16, Wetlands and Other Waters, the Build Alternatives would result in temporary and permanent effects to protected waters as summarized in Tables 2.16-1 and 2.16-3, respectively.

Implementation of Measures BIO-1 through BIO-9, WQ-1, WQ-2, and WQ-3 would avoid and/or minimize the temporary and permanent effects of the Build Alternatives to jurisdictional wetlands and waters. Measures BIO-10 and BIO-11, identified in Section 2.16, would compensate for the effects of the Build Alternatives to jurisdictional wetlands and waters.

Effects of the Other Cumulative Projects Related to Wetlands and Other Waters

The cumulative projects shown in Table 2.21-2 are in the San Juan Creek Watershed. As shown in that table, a number of the cumulative projects would result in effects to protected waters. The severity of those effects would vary based on the acreages of effected protected waters and the functions and values of those waters. It is expected that the majority of those effects would be minimized and/or mitigated.

Potential for Cumulative Effects of Alternative 2 (Preferred Alternative) and Alternative 3 and the Other Cumulative Projects Related to Wetlands and Other Waters

Although the Build Alternatives and the cumulative projects that may affect protected waters would include avoidance, minimization, and/or mitigation measures to address the temporary and permanent effects on protected waters, it is not possible to ensure that all those effects can be avoided, minimized, and/or mitigated such that there would not cumulatively be a net loss of acreage and/or of functions and values of the protected resources. However, based on the compensatory mitigation requirements for the Build Alternatives, the potential contribution of those alternatives to temporary and permanent cumulative adverse effects on protected waters, if any, would be very minor.

Potential Avoidance, Minimization, and/or Mitigation for the Project's Contribution to Cumulative Effects Related to Wetlands and Other Waters

As noted earlier, Measures BIO-1 through BIO-11 and WQ-1 through WQ-3 would avoid, minimize, and/or mitigate the temporary and permanent effects of the Build

Alternatives to jurisdictional wetlands and waters. No further measures are needed to address the potentially very minor contribution of the Build Alternatives to cumulative adverse temporary and permanent effects to protected waters.

2.21.5.9 Threatened and Endangered Species

Resource Study Area for Threatened and Endangered Species

As discussed in Section 2.19, Threatened and Endangered Species, there is potential habitat in the BSA for the following threatened and/or endangered plant and animal species: thread-leaved brodiaea, southern steelhead, white-tailed kite, southwestern willow flycatcher (SWWF), coastal California gnatcatcher (CAGN), and least Bell's vireo (LBV). The presence/absence of those species and potential for effects to those species associated with the Build Alternatives are discussed below.

- Thread-leaved brodiaea, SWWF, and LBV are considered absent from the BSA.
- Although southern steelhead is absent from the BSA, there is potential for southern steelhead-designated critical habitat to be indirectly affected by the Build Alternatives.
- The nonnative grassland habitat in the BSA is suitable for foraging, and the riparian community may be suitable for nesting white-tailed kites.
- CAGN from adjacent areas outside the BSA are expected to forage periodically in and around the BSA during dryer months or during dispersal.

The RSA for threatened and endangered species is the Study Area and the adjacent cities. Because there is a limited number of natural communities in the Study Area Cities and unincorporated areas, threatened and endangered species are also limited in the Study Area.

Effects of Alternative 2 (Preferred Alternative) and Alternative 3 Related to Threatened and Endangered Species

The Build Alternatives may indirectly temporarily affect southern steelhead and its designated critical habitat due to changes in water quality during construction. The disturbance limits for the Build Alternatives were modified to avoid drainage features in and adjacent to the disturbance limits to minimize potential indirect effects to southern steelhead-designated critical habitat, including Oso Creek and its tributary.

Measures BIO-1 through BIO-9, identified in Section 2.15, would also benefit southern steelhead.

The Build Alternatives are not expected to have any direct temporary effect to white-tailed kites as a result of the avoidance and minimization measures described for the riparian/riverine natural community in Section 2.15.1.4.

The Build Alternatives may result in temporary effects to special-status riparian/riverine animal species, including white-tailed kite and LBV due to a loss of 0.7 and 2.08 ac, respectively, of riparian/riverine habitat. However, the white-tailed kite and LBV are not currently using riparian/riverine habitat in the BSA. However, there is a potential they would use this habitat in the future. Therefore, the Build Alternatives are expected to have indirect and temporary effects to the white-tailed kite and LBV through the loss of potential future habitat. Because this species occurs in riparian/riverine habitat, Measures BIO-1 through BIO-9 would benefit white-tailed kites.

Potential direct and indirect temporary effects to CAGN foraging habitat (i.e., non – CSS habitat) would be limited to minimal encroachment (such as temporary removal of edge vegetation during construction, placement of ESA fencing, etc.). Temporary effects would only occur during construction to allow for construction and equipment staging. However, other than potential effects to non-CSS foraging habitat, the Build Alternatives are not expected to result in temporary effects (direct or indirect) in excess of existing conditions to CAGN because the Build Alternatives are limited to the existing I-5 corridor and ramps at the observed location.

The Build Alternatives would result in indirect temporary effects to special-status animal species that use CSS and riparian/riverine habitats due to increased traffic and noise during construction in the vicinity of those habitats. Because these species occur in the riparian/riverine habitat, Measures BIO-1 through BIO-9 would also benefit CAGN and LBV.

Effects of the Other Cumulative Projects Related to Threatened and Endangered Species

As shown in Table 2.21-2, some of the cumulative projects for which environmental effect information was available would result in effects on threatened and endangered species that are less than substantial or less than substantial with mitigation.

Mitigation for those effects would be similar to the types of mitigation measures included in the Build Alternatives. A few cumulative projects would result in no effects to threatened and endangered species. None of the cumulative projects would result in substantial unavoidable adverse effects on threatened and endangered species.

Potential for Cumulative Effects of Alternative 2 (Preferred Alternative) and Alternative 3 and the Other Cumulative Projects Related to Threatened and Endangered Species

Although the Build Alternatives and the cumulative projects that may affect threatened and endangered species would include avoidance, minimization, and/or mitigation measures to address the temporary and permanent effects on these species, it is not possible to ensure that all those effects can be avoided, minimized, and/or mitigated. However, based on the avoidance, minimization, and/or mitigation measures for the Build Alternatives, the potential contribution of those alternatives to temporary and permanent cumulative adverse effects on threatened and endangered species, if any, would be very minor.

Potential Avoidance, Minimization, and/or Mitigation for the Project's Contribution to Cumulative Effects Related to Threatened and Endangered Species

As described above, the Build Alternatives include measures to address their effects on threatened and endangered species. Any of the cumulative projects that would affect threatened and endangered species would also be expected to include avoidance, minimization, and/or mitigation to address those effects. As a result, the contribution of the Build Alternatives to potential short- and long-term cumulative adverse effects on these species would be avoided and/or minimized. No other measures are required to address the Build Alternatives' contribution to cumulative adverse effects on threatened and endangered species.

**2.21.5.10 Invasive Species - Construction
Resource Study Area for Invasive Species**

Because highways can serve as routes for spreading invasive species, the RSA for invasive species was initially defined as the right of way limits along the Study Area and areas immediately adjacent to the Study Area. However, because invasive species are of concern in all areas of native plants and natural communities, the RSA was expanded to include the cities along the project segment of I-5 (San Juan Capistrano, Mission Viejo, Laguna Niguel, Laguna Hills, Laguna Woods, and Lake Forest).

A total of 31 exotic plants on the California Invasive Plant Council (Cal IPC) California Invasive Plant Inventory were identified in the BSA for the proposed project. Of those, six have an overall high rating, 15 have a moderate rating, and 10 have a limited rating. Invasive species that do or could result in severe ecological effects are given a high rating. The invasive plant species in the BSA with a high

rating are Hottentot-fig, sweet fennel, English ivy, tamarisk, giant reed, and pampas grass. It is expected that these invasive species and additional invasive plant species on the California Invasive Plant Inventory may occur in the cities adjacent to the Study Area.

Effects of Alternative 2 (Preferred Alternative) and Alternative 3 Related to Invasive Species

During construction of the Build Alternatives, there would be the potential to spread invasive species when construction equipment contaminated by invasives enters and exits construction areas, if invasive species are included in seed mixtures and mulch, and if invasive species are improperly removed and disposed of so that seed is spread along the highway. Measures BIO-20 and BIO-21, identified in Section 2.20, avoid and/or minimize the effects of the Build Alternatives related to invasive species during construction.

Effects of the Other Cumulative Projects Related to Invasive Species

The cumulative projects listed in Table 2.21-2 have the potential to result in the spread of invasive species as the result of the same types of construction activities described above for the Build Alternatives. Those types of effects would likely be addressed by measures similar to measures BIO-20 and BIO-21 required by the lead agencies or local jurisdictions for those projects.

Potential for Cumulative Effects of Alternative 2 (Preferred Alternative) and Alternative 3 and the Other Cumulative Projects Related to Invasive Species

The Build Alternatives and the four cumulative projects that could be under construction concurrently could contribute to a cumulative adverse effect related to the spread of invasive species. However, as noted above, most projects are expected to include project-specific avoidance, minimization, and/or mitigation measures to address potential effects associated with the spread of invasive species during construction.

Potential Avoidance, Minimization, and/or Mitigation for the Project's Contribution to Cumulative Effects Related to Invasive Species

Measures BIO-20 and BIO-21 would avoid and/or minimize the spread of invasive species during the construction of Alternatives 2 or 3. No further measures are required to address the contribution of the Build Alternatives to cumulative effects related to invasive species.

2.21.6 Avoidance, Minimization, and/or Mitigation Measures

Measures to avoid, minimize, or mitigate harm resulting from construction and operation of the Build Alternatives are provided in Sections 2.1 through 2.20. Those measures address temporary direct and indirect effects during construction and permanent direct and indirect effects during operation of either of the Build Alternatives. No measures beyond those identified in Sections 2.1 through 2.20 and summarized in this section are required to address the potential contributions of the Build Alternatives to cumulative adverse effects.

Table 2.21-1 Resources for Which Alternative 2 (Preferred Alternative) and Alternative 3 Would not Contribute to Cumulative Effects

Resource/Impact Category	Reason Why Alternative 2 (Preferred Alternative) and Alternative 3 Would Not Contribute to a Cumulative Effect for the Resource
Land Use	<p>Consistency with land use designations: The construction of the Build Alternatives would not result in effects related to General Plan land use designations. The Build Alternatives would result in minor permanent changes in General Plan land use designations as a result of the incorporation of land not currently designated for transportation uses into the I-5 facility. This effect would be avoided and/or minimized based on implementation of Measure LU-6. As a result, the Build Alternatives would not contribute to cumulative effects related to General Plan Land Use designations. Therefore, this environmental topic was not evaluated further in this analysis.</p> <p>Consistency with existing plans and policies: The Build Alternatives would not result in permanent direct or indirect short- or long-term adverse effects related to consistency with existing plans and policies and, as a result, would not contribute to cumulative effects related to consistency with plans and policies. Therefore, this environmental topic was not evaluated further in this analysis.</p> <p>Recreation resources: As discussed in Section 2.1, Land Use, construction of the Build Alternatives could result in temporary access effects on trails in the Study Area, which would be minimized based on implementation of Measures LU-1 through LU-5. Because the construction of the Build Alternatives would not result in adverse short-term effects to trails, it would not contribute to cumulative effects related to temporary effects to trails. The Build Alternatives would result in the permanent use of small amounts of land from Mission Viejo High School. However, the acreage required from this property for the Build Alternatives is considered minimal, and it is unlikely that the use of this nominal amount of land would impair the existing recreational uses at this property. As a result, the Build Alternatives would not contribute to a permanent cumulative adverse effect related to recreation resources. Therefore, this environmental topic was not evaluated further in this analysis.</p> <p>Coastal Zone and Wild and Scenic Rivers: As discussed in the introductory section of Chapter 2 (Section 2.0), the Study Area is outside the Coastal Zone and the Build Alternatives are not anticipated to affect coastal resources. There are no rivers listed in the National Inventory of Wild and Scenic Rivers in the Study Area. As a result, the Build Alternatives would not contribute to cumulative adverse effects related to coastal resources and Wild and Scenic Rivers and, therefore, those environmental topics were not evaluated further in this analysis.</p>
Growth-Related Effects	<p>As discussed in Section 2.2, Growth, and as summarized in Table 2.2-2, population and job growth in the Study Area cities and Orange County is forecasted based on adopted land use plans, economic conditions, and other factors. The Build Alternatives address existing operational and capacity deficiencies on I-5 as well as planned growth and would not foster growth beyond what is projected due to the lack of vacant land in the Study Area. The proposed project would not be expected to influence the amount, location, and/or distribution of growth in the Study Area because the proposed</p>

Table 2.21-1 Resources for Which Alternative 2 (Preferred Alternative) and Alternative 3 Would not Contribute to Cumulative Effects

Resource/Impact Category	Reason Why Alternative 2 (Preferred Alternative) and Alternative 3 Would Not Contribute to a Cumulative Effect for the Resource
	<p>project does not include the provision of any new on- or off-ramps on I-5, and the Study Area is largely built out. Because there is very little vacant land available in the vicinity of the Study Area, the proposed project will not create new housing or opportunities for capital investment by the public or private sectors. Although the proposed project would result in changes in land use at the I-5/Avery Parkway and I-5/La Paz Road interchanges, it would not result in direct or indirect changes in economic vitality and population density. Therefore, the Build Alternatives are not considered growth-inducing. As a result, the Build Alternatives would not contribute to cumulative adverse effects related to growth, and this environmental topic was not evaluated further in this analysis.</p>
Farmlands/Timberlands	<p>As discussed at the beginning of Chapter 2, there are no timberlands or designated agricultural lands within or immediately adjacent to the Study Area. As a result, the Build Alternatives would not result in direct or indirect effects to timberlands and designated agricultural lands and, therefore, timberlands and designated agricultural lands were not evaluated further in this analysis.</p>
Community Impacts: Community Character and Cohesion	<p>The Build Alternatives would not permanently directly or indirectly adversely affect community cohesion because I-5 is an existing transportation facility. No residential acquisitions would occur under the Build Alternatives. The Build Alternatives would require full acquisition of four nonresidential parcels in commercial areas that do not demonstrate indicators of high community cohesion. The Build Alternatives would not divide or fragment an existing, cohesive neighborhood. The effects of the Build Alternatives related to property acquisition would be minimized based on compliance with the Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970, as required in Measures CI-1 and CI-2. As a result, the Build Alternatives would not contribute to cumulative adverse effects related to community character and cohesion. Therefore, this environmental topic was not evaluated further in this analysis.</p>
Community Impacts: Relocations and Real Property Acquisitions	<p>As discussed in Section 2.3.2, the Build Alternatives would result in the full acquisition of four nonresidential properties. Alternative 2 would result in partial acquisitions totaling approximately 83,316 sf from 24 parcels, and Alternative 3 would result in partial acquisitions totaling approximately 137,422 sf from 31 parcels. Effects related to property acquisition for the Build Alternatives would be minimized based on compliance with the Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970.</p> <p>As shown in Table 2.21-2, some of the cumulative projects are transportation projects that may result in the acquisition of property to accommodate the improvements in those projects. None of the cumulative transportation projects for which environmental information was available would result in substantial unavoidable adverse effects related to relocations and real property acquisitions. As a result, the Build Alternatives would not contribute to cumulative adverse effects related to relocations and real property acquisitions, and this environmental topic was not evaluated further in this analysis.</p>

Table 2.21-1 Resources for Which Alternative 2 (Preferred Alternative) and Alternative 3 Would not Contribute to Cumulative Effects

Resource/Impact Category	Reason Why Alternative 2 (Preferred Alternative) and Alternative 3 Would Not Contribute to a Cumulative Effect for the Resource
Community Impacts: Environmental Justice	<p>As discussed in Section 2.3.3, Environmental Justice, and as shown in Table 2.3-17, the Study Area does not have a substantial percentage of low-income or minority populations. The Build Alternatives would result in direct and indirect temporary construction effects, as described in Section 2.3.1, Community Character and Cohesion, which would be the same for all populations in the Study Area regardless of ethnicity, income, or transit dependence. Therefore, the direct and indirect temporary effects of the Build Alternatives would not cause disproportionately high and adverse temporary effects to environmental justice populations.</p> <p>The Build Alternatives would not displace any residents and would improve the existing highway by addressing deficiencies in the existing transportation system. The Build Alternatives would benefit most Study Area residents, including minority and low-income populations, by improving mobility and circulation throughout the Study Area. By addressing deficiencies in the transportation system, the Build Alternatives would enhance mobility and improve connections for minority and low-income residents in the Study Area. Census Tracts 320.14 and 320.22 have high percentages of Hispanic residents (52 and 45.8 percent, respectively). However, because there would be no residential acquisitions in those census tracts, the Build Alternatives would not cause any permanent disproportionately high and adverse indirect or direct effects on minority or low-income populations.</p> <p>As a result, the Build Alternatives would not contribute to cumulative adverse effects related to environmental justice and, therefore, this environmental topic was not evaluated further in this analysis.</p>
Utilities and Emergency Services	<p>Utilities: As discussed in Section 2.4, Utilities and Emergency Services, and as shown in Table 2.4-1, the Build Alternatives would require the relocation of utility facilities owned/operated by SCG, MNWD, SDG&E, Level 3, Kinder Morgan, AT&T, Cox Communications, Verizon, Qwest, ETWD, and SCE. Alternative 3 would also require the relocation of a 10-inch MNWD sewer line, one SDG&E underground electrical line, two overhead SDG&E electrical lines, and a Verizon fiber optic line. These temporary direct effects to utilities would be avoided and/or minimized through compliance with standard requirements during project construction of the Build Alternatives. All utilities that require relocation would be relocated on site within the environmentally evaluated footprint for the project. Measure U-1 addresses relocation of utility facilities and maintenance of service during construction of the Build Alternatives. There would be no long-term effects on utility facilities and services under the Build Alternatives.</p> <p>Emergency Services: During construction of the Build Alternatives, temporary traffic delays may be experienced in the Study Area that could affect emergency service responses. The construction-related traffic effects would be temporary and would be minimized based on development and implementation of a TMP. Measures U-2, U-3, and U-4 would further</p>

Table 2.21-1 Resources for Which Alternative 2 (Preferred Alternative) and Alternative 3 Would not Contribute to Cumulative Effects

Resource/Impact Category	Reason Why Alternative 2 (Preferred Alternative) and Alternative 3 Would Not Contribute to a Cumulative Effect for the Resource
	<p>minimize construction-related traffic effects on emergency services under the Build Alternatives.</p> <p>As a result, the Build Alternatives would not contribute to cumulative effects related to utilities and emergency services, and, therefore, this environmental topic was not evaluated further in this analysis.</p>
Traffic - Operations	<p>The future year traffic volumes for the No Build and Build Alternatives assumed population and employment growth in Orange County based on adopted demographic forecasts. As a result, the traffic analysis in Section 2.5, Traffic and Transportation/Pedestrian and Bicycle Facilities, includes future development, including the transportation and land development projects listed in Table 2.21-2. Therefore, the analysis in Section 2.5 is a cumulative effects analysis. That analysis shows:</p> <p><u>Performance of Ramp and Arterial Intersections in 2022 (Opening Year)</u></p> <p>No Build Alternative and Build Alternatives: no ramp or arterial intersections exceed the applicable performance standards</p> <p><u>Mainline LOS in 2022 (Opening Year)</u></p> <p>No Build Alternative: Four northbound and one southbound mainline segments would operate at LOS F in the a.m. and p.m. peak hours</p> <p>Alternative 2: Four northbound mainline segments are projected to operate at LOS F in the a.m. peak hour, and two northbound and three southbound mainline segments would operate at LOS F in the p.m. peak hour</p> <p>Alternative 3: Three northbound mainline segments are projected to operate at LOS F in the a.m. peak hour, and one northbound and three southbound mainline segments would operate at LOS F in the p.m. peak hour</p> <p><u>Performance of Ramp and Arterial Intersections in 2045 (Future Year)</u></p> <p>No Build Alternative: Nine ramp and eight arterial intersections exceed the applicable performance standards</p> <p>Alternative 2: Seven ramp and six arterial intersections exceed the applicable performance standards</p> <p>Alternative 3: Seven ramp and six arterial intersections exceed the applicable performance standards</p> <p><u>Mainline LOS in 2045 (Future Year)</u></p> <p>No Build Alternative: Seven northbound and four southbound mainline segments would operate at LOS F in the a.m. and p.m. peak hours</p> <p>Alternative 2: Seven northbound and two southbound mainline segments would operate at LOS F in the a.m. peak hour, and three northbound and five southbound mainline segments would operate at LOS F in the p.m. peak hour</p>

Table 2.21-1 Resources for Which Alternative 2 (Preferred Alternative) and Alternative 3 Would not Contribute to Cumulative Effects

Resource/Impact Category	Reason Why Alternative 2 (Preferred Alternative) and Alternative 3 Would Not Contribute to a Cumulative Effect for the Resource
	<p>Alternative 3: Seven northbound and three southbound mainline segments would operate at LOS F in the a.m. peak hour, and six northbound and four southbound mainline segments would operate at LOS F in the p.m. peak hour</p> <p>In summary, the Build Alternatives would result in improved operating conditions compared to the No Build Alternative and would not contribute to cumulative adverse traffic effects. Therefore, this environmental topic was not evaluated further in this analysis.</p>
Visual/Aesthetics	<p>As discussed in Section 2.7, Visual/Aesthetics, construction-related vehicle access and staging of construction materials and equipment would occur within Caltrans right of way and disturbed or developed areas within the Study Area. Motorists and viewers above the elevation of I-5 would have temporary views of construction activity, equipment, and staging areas for the Build Alternatives. Some night construction lighting may also be visible outside the construction areas. Those visual effects would be minimized through construction lighting types, plans, and placement that would be reviewed at the discretion of the Caltrans District Landscape Architect (Measure VIS-4). Visible short-term dust would be minimized based on compliance with the dust suppression measures in SCAQMD Rule 403 and Caltrans Standard Specifications for Construction (Sections 10 and 18 [Dust Control]). Because these effects would be temporary, construction of the Build Alternatives would not contribute to a cumulative adverse visual effect and, therefore, this environmental topic was not evaluated further in this analysis.</p> <p>The Build Alternatives would add auxiliary and general-purpose lanes on I-5, improve interchanges, replace bridges, reconfigure ramps, provide new/reconstructed soundwalls, and provide a new community enhancement wall. Although Alternative 3 would result in slightly increased hardscape as a result of an additional travel lane compared to Alternative 2, both alternatives would result in similar visual effects to I-5 travelers, local road users, and viewers from adjacent land uses. They would result in a moderate visual effect due to the additional hardscape, removal of existing landscaping, and demolition of structures. Although the visual change may be noticeable to viewers, the design of the Build Alternatives would blend into the existing landscape, and the potential visual effects to sensitive viewers would be avoided and/or minimized based on implementation of Measures VIS-1 through VIS-3. Because the visual effects of the Build Alternatives would be moderate and would blend in with the existing landscape, they would not contribute to a cumulative adverse visual effect and, therefore, this environmental topic was not evaluated further in this analysis.</p>

Table 2.21-1 Resources for Which Alternative 2 (Preferred Alternative) and Alternative 3 Would not Contribute to Cumulative Effects

Resource/Impact Category	Reason Why Alternative 2 (Preferred Alternative) and Alternative 3 Would Not Contribute to a Cumulative Effect for the Resource
Cultural Resources	<p>As discussed in Section 2.7, Cultural Resources, based on the results of the HPSR and HRER, it was determined that no historic properties would be affected by the Build Alternatives. As discussed in the ASR, the ADI has previously been extensively disturbed by development, and the likelihood of encountering intact archaeological resources during construction of the Build Alternatives is low. The area in the I-5 right of way has either been completely disturbed by previous freeway construction or consists entirely of fill. Although considered unlikely, there is the potential to encounter unknown buried cultural materials or human remains in the disturbance limits during construction of the Build Alternatives. Those potential effects would be avoided and/or minimized with implementation of Measures CR-1, CR-2 and CR-3. As a result, the Build Alternatives would not contribute to a cumulative adverse effect related to cultural resources. Therefore, this environmental topic was not evaluated further in this analysis.</p>
Hydrology and Floodplains	<p>As discussed in Section 2.8, Hydrology and Floodplain, the alignments of the Build Alternatives cross floodplains Aliso Creek (100-year floodplain), La Paz Channel (100-year floodplain and 500-year special flood hazard area), and Oso Creek (100-year floodplain and 500-year special flood hazard area). During construction of the Build Alternatives, construction equipment would operate in these floodplains. Construction activities have the potential to effect the natural and beneficial values of these floodplains, which could effect water quality. Erosion Control, Sediment Control, and Good Housekeeping BMPs would be implemented in compliance with the requirements of the Construction General Permit to address those potential effects. Measure HY-1 requires that work in these areas be scheduled to occur in the dry season (May to September), and Measure HY-2 requires an encroachment permit from the Orange County Flood Control District for work in these floodplains.</p> <p>The improvements in the Build Alternatives would permanently encroach into the Aliso Creek, La Paz Channel, and Oso Creek floodplains. The maximum change in water surface elevations compared to existing conditions at those locations would exceed the water surface elevation increase allowed by NFIP. Measure HY-5 requires that the final design at these crossings ensures that the increases are reduced to less than 1.0 ft. The longitudinal crossings of La Paz Channel, Aliso Creek, and Oso Creek at I-5 would not encroach on those floodplains. The potential risk to life and property under the Build Alternatives would remain unchanged from existing conditions. The Build Alternatives would not result in permanent changes to living resource values in the floodplains; would result in permanent indirect effects to CSS similar to existing conditions; would not result in a detrimental effect on cultural resource values; would not adversely reduce the ability of the floodplains to moderate flood flows; and would not affect water quality maintenance and groundwater recharge. The potential risk to natural and beneficial floodplain values as a result of the Build Alternatives is minimal. The Build Alternatives would not support incompatible floodplain development. In summary, the combined assessed level of risk under the Build Alternatives is "low risk."</p> <p>Because the Build Alternatives would not result in effects related to hydrology and floodplains after avoidance and</p>

Table 2.21-1 Resources for Which Alternative 2 (Preferred Alternative) and Alternative 3 Would not Contribute to Cumulative Effects

Resource/Impact Category	Reason Why Alternative 2 (Preferred Alternative) and Alternative 3 Would Not Contribute to a Cumulative Effect for the Resource
	<p>minimization, they would not contribute to cumulative effects related to hydrology and floodplains. Therefore, these environmental topics were not evaluated further in this analysis.</p>
<p>Geology, Soils, Seismicity, and Topography</p>	<p>As discussed in Section 2.10, Geology/Soils/Seismicity/Topography, construction activities under the Build Alternatives would disturb soil and alter existing landforms. Temporary effects of those activities would include soil compaction and an increased possibility of soil erosion.</p> <p>The Build Alternatives are expected to have minimal effect on geologic and topographic conditions. However, design and construction of the Build Alternatives could be constrained by seismic shaking, landslides, slope instability, liquefaction, erosion, and corrosion. There is potential for moderate to severe seismic shaking during the life of the improvements in the Build Alternatives. The Build Alternatives would be designed and constructed to accommodate expected ground accelerations, which would minimize the potential for structural damage due to seismic events.</p> <p>Several slopes in the Study Area are in mapped earthquake-induced landslide hazard zones. Subsurface exploration and laboratory testing would be conducted during final design to further evaluate the potential earthquake-induced landslide hazard and to characterize the geotechnical conditions in those areas for use in preparing the final design. Implementation of measures in the Final GDR and SFRs would ensure that there are no direct or indirect permanent adverse effects under the Build Alternatives due to landslides or slope instability.</p> <p>Part of the Study Area is located in an area that may be subject to liquefaction. Potential effects due to liquefaction and seismic compaction can be reduced during final design and construction based on implementation of measures recommended in the Final GDR and SFRs, which would ensure that no adverse direct or indirect permanent effects from liquefaction occur under the Build Alternatives.</p> <p>Grading for the Build Alternatives would alter existing landforms, which may increase the potential for erosion of those disturbed landforms. Erosion and sedimentation in natural drainages and along natural slopes may also effect the design of the Build Alternatives. Erosion control minimization measures, including improved drainage control and landscaping, would be included in the construction and operation of the Build Alternatives.</p> <p>Soils in the Study Area derived from the Capistrano and Monterey Formations and groundwater that has permeated those formations have the potential to contain high sulfate concentrations, which can be corrosive to steel and damaging to concrete, which could affect the design of the Build Alternatives.</p> <p>Measures GEO-1 and GEO-2 would avoid and/or minimize short- and long-term geotechnical effects under the Build Alternatives. Because the Build Alternatives would not result in effects related to geology, soils, seismicity, and topography, they would not contribute to cumulative effects related to those parameters. Therefore, these environmental topics were not evaluated further in this analysis.</p>

Table 2.21-1 Resources for Which Alternative 2 (Preferred Alternative) and Alternative 3 Would not Contribute to Cumulative Effects

Resource/Impact Category	Reason Why Alternative 2 (Preferred Alternative) and Alternative 3 Would Not Contribute to a Cumulative Effect for the Resource
Hazardous Wastes and Hazardous Materials	<p>As discussed in Section 2.12, Hazardous Waste/Materials, the analysis of the potential hazardous waste and materials effects of the Build Alternatives indicates potential concerns during construction related to disturbance of potentially contaminated soil and/or groundwater; relocation of buried asbestos-containing cementitious pipe (transite); ACMs in bridges constructed before 1996; the presence of ACMs, PCBs, mercury, and CFCs in buildings and structures that would be demolished or renovated; presence of PCBs in pad- and pole-mounted electrical transformers; potential for transformers leaking PCBs; presence of ADL in soils adjacent to roads; potential for elevated concentrations of metals, petroleum hydrocarbons, and VOCs in soils along the railroad tracks; and the potential for elevated concentrations of metals such as lead in yellow traffic striping and pavement-marking materials that would be removed as part of the Build Alternatives. Measures HW-1 through HW-10 would avoid and minimize these effects prior to and during construction. Analysis of the potential effects of the Build Alternatives related to hazardous wastes and materials indicates that the Build Alternatives would not result in adverse effects related to hazardous wastes and materials after implementation of the measures included in the design of the Build Alternatives. As a result, the Build Alternatives would not contribute to cumulative adverse effects related to hazardous wastes and materials and, therefore, this environmental was not evaluated further in this analysis.</p>
Air Quality - Operations	<p>As discussed in Section 2.13, Air Quality, the CO hot-spot analysis concluded that operation of the Build Alternatives would alleviate several peak-hour deficiencies, would reduce congestion and overall travel time, and would not increase the number of vehicles operating in cold start mode. The Build Alternatives have sufficiently addressed the potential CO effect, and no further analysis or minimization measures related to CO are needed.</p> <p>The qualitative hot-spot analysis determined that the Build Alternatives would not result in new violations of the federal PM₁₀ and PM_{2.5} air quality standards.</p> <p>The analysis indicated that MSAT emissions would not vary substantially between the future No Build and Build Alternatives, and that while diesel exhaust may pose potential cancer risks, most receptors' short-term exposure would cause only minimal harm, and these risks would also greatly diminish in the future due to planned emission control regulations.</p> <p>The potential for NOA to be present within the Study Area is low. The potential for asbestos to be encountered during demolition under the Build Alternatives is also low because the majority of the demolition would be concrete, which does not contain asbestos.</p> <p>The proposed project is listed in the SCAG financially constrained 2012–2035 RTP (RTP ID 2M0730), which was found to conform to the SIP by the FHWA/FTA on June 5, 2012. The proposed Build Alternatives are also included in the SCAG financially constrained 2013 FTIP. The 2013 FTIP was also determined to conform by the FHWA/FTA on December 14,</p>

Table 2.21-1 Resources for Which Alternative 2 (Preferred Alternative) and Alternative 3 Would not Contribute to Cumulative Effects

Resource/Impact Category	Reason Why Alternative 2 (Preferred Alternative) and Alternative 3 Would Not Contribute to a Cumulative Effect for the Resource
	<p>2012. The design concept and scope of the Build Alternatives are consistent with the project description in the 2012 RTP, the 2013 FTIP, and the assumptions in SCAG's regional emission analysis.</p> <p>Because the Build Alternatives would not result in adverse effects related to long-term air quality, they would not contribute to cumulative adverse long-term air quality effects. Therefore, this environmental topic was not evaluated further in this analysis.</p>
Noise - Operations	<p>The future year traffic volumes for the No Build and Build Alternatives assumed population and employment growth in Orange County based on adopted demographic forecasts. As a result, the long-term traffic noise impact analysis in Section 2.14, Noise, includes the effects of future development, including the cumulative transportation and land development projects listed in Table 2.21-2. Therefore, the analysis of long-term noise effects in Section 2.14 is a cumulative impacts analysis. That analysis shows that future noise levels would approach or exceed the NAC at a number of receptors under the No Build Alternative and both Build Alternatives, as shown in Table 2.14-9. As a result, the future No Build Alternative reflects the effects of traffic generated by the cumulative projects, and the Build Alternatives reflect the effects of traffic generated by both the Build Alternatives and the cumulative projects. Because the long-term noise impact analysis is a cumulative analysis, this environmental topic was not evaluated further in this analysis.</p>
Plant Species	<p>As discussed in Section 2.17, Plant Species, construction and operation of the Build Alternatives are not expected to affect any of the 17 special-status plant species potentially occurring or known to occur in the BSA because they are considered absent from the BSA. No avoidance, minimization, and/or mitigation measures are required. Because the Build Alternatives would not contribute to cumulative short- or long-term adverse effects on plant species, this environmental topic was not evaluated further in this analysis.</p>
Invasive Species (operational)	<p>As discussed in Section 2.20, Invasive Species, the plant palette for permanent revegetation of disturbed areas and other areas in the rights-of-way under the Build Alternatives would not include any invasive species. Measures BIO-16 through BIO-18 specifically address the plant palette and the long-term revegetation of disturbed areas and areas within the rights-of-way. Therefore, long-term operation of the Build Alternatives would not result in an adverse effect related to invasive species. As a result, operation of the Build Alternatives would not contribute to a cumulative effect related to invasive species, and this environmental topic was not evaluated further in this analysis.</p>

Table 2.21-1 Resources for Which Alternative 2 (Preferred Alternative) and Alternative 3 Would not Contribute to Cumulative Effects

Resource/Impact Category	Reason Why Alternative 2 (Preferred Alternative) and Alternative 3 Would Not Contribute to a Cumulative Effect for the Resource
Mineral Resources	As shown in Section IX, Mineral Resources, in Appendix A, there are no known mineral resources or mineral resource recovery sites within or in the immediate vicinity of the disturbance limits for the Build Alternatives. As a result, the Build Alternatives would not result in direct or indirect effects to mineral resources, and no avoidance, minimization, and/or mitigation measures are required. Therefore, mineral resources were not evaluated further in this analysis.

Sources: Analyses provided in Sections 2.1 through 2.20 and Appendix A.

ACMs = asbestos-containing materials

ADI = Area of Direct Impacts

ADL = aerially deposited lead

ASR = Archeological Survey Area

BMPs = best management practices

BSA = Biological Survey Area

Caltrans = California Department of Transportation

CFCs = chlorofluorocarbons

CO = carbon monoxide

CSS – coastal sage scrub

ETWD = El Toro Water District

FHWA = Federal Highway Administration

ft = feet

FTA = Federal Transit Administration

FTIP = Federal Transportation Improvement Program

GDR = Geotechnical Design Report

HPSR = Historic Property Survey Report

HRER = Historic Resources Evaluation Report

I-5 = Interstate 5

LOS = level of service

MNWD = Moulton Niguel Water District

MSAT = mobile source air toxic

NAC = Noise Abatement Criteria

NFIP = National Flood Insurance Program

NOA = naturally occurring asbestos

PCBs = polychlorinated biphenyls

PM₁₀ = Particles of 10 micrometers or smaller

PM_{2.5} = Particles of 2.5 micrometers and smaller

RTP = Regional Transportation Plan

SCAG = Southern California Association of Governments

SCAQMD = South Coast Air Quality Management District

SCE = Southern California Edison

SCG = Southern California Gas

SDG&E = San Diego Gas and Electric

SFR = Structure Foundation Reports

SIP = State Implementation Plan

TMP = Transportation Management Plan

VOCs = volatile organic compounds

Table 2.21-2 List of Cumulative Projects and Potential Environmental Effects

ID No.	Project Title	Project Description	Lead Agency	Project Status	Potential Project Impacts and Data Sources ¹
Freeway and Toll Road Projects					
1	I-5/El Toro Road Interchange improvements	Update and improvement of the I-5/El Toro Road Interchange in the Cities of Laguna Hills and Lake Forest	OCTA with Caltrans and the Cities of Laguna Hills and Lake Forest	Project Study Report underway.	No information on the environmental impacts of this project was available at the time this cumulative impacts analysis was conducted. Source: OCTA (website)
2	I-5/La Paz Road interchange improvements	Widen the southbound I-5 off-ramp to four lanes, create a second left turn lane from westbound La Paz to southbound Cabot Road, create a third eastbound travel lane for exclusive access for the freeway ramps, modify traffic signals,, landscaping, and water quality improvements.	City of Laguna Hills with Caltrans and the City of Mission Viejo	Construction of this project is complete.	Because this project is complete, it would not contribute to cumulative effects. Sources: "Capital Improvement Project La Paz Widening at Interstate 5" in the Laguna Hills City View news magazine and guide (2010/11 Winter)
3	I-5/Crown Valley Parkway	Widen the southbound off-ramp from four to five lanes at the interchange of I-5 and Crown Valley Parkway	City of Mission Viejo and Caltrans	Construction of this project is complete.	Because this project is complete, it would not contribute to cumulative effects. Source: OCTA Final LRTP (2010)
4	I-5/Marguerite Parkway interchange	Add an interchange on I-5 with Marguerite Parkway (Saddleback College connection)	Not available	The project is scheduled to be operational in 2020.	No information on the environmental impacts of this project was available at the time this cumulative impacts analysis was conducted. Source: OCTA Final LRTP (2010)
5	I-5/Alicia Parkway interchange improvement	Improve the interchange of I-5 with Alicia Parkway	Not available	The project is scheduled to be operational in 2021.	No information on the environmental impacts of this project was available at the time this cumulative impacts analysis was conducted. Source: OCTA Final LRTP (2010)
6	I-5/Los Alisos Boulevard Interchange	Add an interchange at Los Alisos Boulevard	Not available	The project is scheduled to be operational in 2023.	No information on the environmental impacts of this project was available at the time this cumulative impacts analysis was conducted. Source: OCTA Final LRTP (2010)
7	I-5 from Oso Creek to Grand Avenue	Continuous access HOV lane striping from Oso Creek to Grand Avenue	OCTA	Construction of this project is scheduled to begin in FY 2014/2015.	Because this project would consist of restriping and no physical construction, cumulative effects are not anticipated. Source: OCTA Budget Amendment to the Fiscal Year 2012–2013 Budget for the Interstate 405 High-Occupancy Vehicle Continuous Access Striping Project from Interstate 5 to State Route 73 Staff Report (February 4, 2013)
8	SR-73 widening from I-5 to Jamboree Road	Add a fourth general purpose lane in the median of northbound SR-73 between Aliso Viejo Parkway and Laguna Canyon Road and between Sand Canyon Avenue and Bison Avenue	TCA	This project is scheduled to be operational in 2020.	Less than significant impacts, less than significant impacts with mitigation, or no changes or new information requiring the preparation of an EIR: geology and soils (seismic shaking and ground failure, liquefaction, erosion, and unstable soils); water (changes in drainage patterns and amount of runoff; flooding; discharges to surface waters; and changes in amounts of surface waters, water courses, and in groundwater); transportation/circulation (increased vehicle trips, emergency access, and hazards for pedestrians/bicyclists); air quality (violate air quality standards, expose sensitive populations, and odors); increased noise levels; biological resources (endangered, threatened, and rare species and their habitats, wetlands, wildlife movements, adopted plans); aesthetics (light or glare); cultural/scientific resources (paleontological, archeological, and historic resources); hazards (risk of explosion or release; health hazard, and fire hazard). Significant unavoidable adverse impacts after mitigation: none. No impact: land use and planning; population and housing; geology and soils (fault rupture, seiche or tsunami, landslides, mudslides, subsidence, expansive soils, unique geological or physical features); water (groundwater quality and availability); transportation/circulation (hazards from design features, parking, conflicts with adopted policies, and impacts to rail, air, water modes); air quality (changes in air movement, etc.); noise (levels exceeding standards); biological resources (locally designated species or natural communities); aesthetics (scenic

Table 2.21-2 List of Cumulative Projects and Potential Environmental Effects

ID No.	Project Title	Project Description	Lead Agency	Project Status	Potential Project Impacts and Data Sources ¹
					<p>vista, scenic highway, demonstrable negative aesthetic effect); cultural/scientific resources (paleontological resources, sacred uses); recreation; energy and mineral resources; hazards (emergency response or evacuation plans, and health hazards); public services; and public utilities.</p> <p>Source: Addendum to the FEIR for the State Route 73 (SR-73) Widening Between Interstate 5 (I-5) in the City of San Juan Capistrano and Jamboree Road in the City of Newport Beach (LSA Associates, Inc., January 2008).</p>
<p>-- See Note 1 at end of table</p>	<p>South Orange County Transportation Infrastructure Improvement Project (preferred alternative: A7C-FEC-M) (not shown on Figure 2.21-1; it is located approximately 3.0 miles east of the southern part of the project segment of I-5)</p>	<p>This is the southern extension of the existing FTC toll facility from its existing southern terminus at Oso Parkway to I-5 in the vicinity of the Orange/San Diego County line.</p>	<p>TCA</p>	<p>The TCA certified the Final EIR for in 2006 but was unable to obtain a determination that the project is consistent with the Coastal Zone Management Act. The TCA is currently pursuing a stakeholder outreach program.</p>	<p>The potential effects of the preferred alternative are:</p> <p>Adverse impacts before mitigation: traffic (indirect impacts to one I-5 ramp intersection and five I-5 ramps; short-term impacts during construction); wetlands and waters of the United States (direct and indirect impacts during construction; impacts to water quality and runoff volumes during construction); biological resources (temporary and permanent effects on plants, wildlife habitat and corridors, and threatened and endangered species); water quality (minimal effects during construction, adverse effects at Canada Chiquita and Segunda Deshecha Canada, potential growth-inducing effects; air quality (exceedance of NO_x standard during operations and CO, HC, NO_x, and PM₁₀ standards during construction); noise (long-term impacts to 120 residences, two schools, and two parks, and short-term noise during construction, including pile-driving and haul route traffic); military (short- and long-term impacts to special use airspace, aviation, ground, and amphibious training, land use and security); visual resources (short- and long-term impacts related to visual quality and light and glare); land use impacts (permanent use of land in unincorporated Orange County, the RMV Ranch Plan, and San Onofre State Beach); recreation resources (short- and long-term impacts related to air quality, noise, acquisition of property, traffic, and visual resources); floodplains, waterways, and hydrologic systems (temporary floodplain encroachments, minor impacts to land uses in/adjacent to San Mateo Creek, minor access effects at San Onofre Creek, minor flood potential at Beach Club Road at San Onofre Creek; minimal scour effect on beneficial floodplain values, hazardous materials and hazardous waste sites (potential impacts during construction related to USTs, LUSTs, other potentially contaminated sites, other releases, past pesticide and herbicide use, petroleum pipelines, asbestos-containing building materials, aerially deposited lead, undocumented abandoned oil wells or test borings; and the use and release of hazardous materials, and Prima Deshecha Landfill; and, during operations, potential impact of transporting hazardous materials/wastes in areas not presently subject to this risk); public services and utilities (temporary and permanent effects related to wildfires, access to the fire road grid, need for security on the MCAS Camp Pendleton, electric substation, service interruptions, and relocation of high voltage electric lines; and temporary impacts to emergency access during construction); earth resources (temporary lowering of groundwater and increased water material, and substantial volumes of cut and fill); paleontological resources (permanent direct and indirect impacts to paleontological resources); historic, archeological, and Section 4(f) resources (permanent impacts to 19 archeological resources sites, one existing State Park, one proposed regional park, two proposed trails, and five NRHP eligible cultural resources); farmland (permanent use of designated farmland and impacts to access to farming operations on RMV and MCAS Camp Pendleton); pedestrian and bicycle facilities (temporary impacts during construction to two proposed trails, three bikeways, and sidewalks; permanent use of part of one trail and permanent visual impacts on trails); and Coastal Zone (project requires a coastal development permit).</p> <p>Significant unavoidable adverse impacts: short-term traffic; conflicts with adopted land use plans; conversion of farmland to non-agricultural use; visual impacts on trails; short- and long-term air quality impacts; impacts to six plant communities and five plant species; impacts to one</p>

Table 2.21-2 List of Cumulative Projects and Potential Environmental Effects

ID No.	Project Title	Project Description	Lead Agency	Project Status	Potential Project Impacts and Data Sources ¹
					<p>plant, one toad, and one bird threatened and endangered species; permanent encroachment into the coastal zone; permanent impacts to cultural resources; visual impacts at seven view locations and one regionally outstanding view, and conflicts with adopted visual resources plans; permanent lowering of the groundwater level at one mapped spring; temporary and permanent impacts on the Military Mission at MCAS Camp Pendleton; permanent impacts on paleontological resources; and short- and long-term noise and air quality impacts on recreation resources, and permanent visual impacts on recreation resources.</p> <p>Beneficial effects or no adverse impacts: beneficial peak-hour effects at 18 locations, surface and groundwater quality; long term congestion relief and improved mobility; creation of construction jobs; floodplains, waterways, and hydrologic systems (scouring at bridge footings; floodplain encroachment, incompatible floodplain development, no longitudinal encroachments, negligible groundwater effects); paleontological resources (beneficial effect related to new information); energy; and mineral resources.</p> <p>Source: Final Subsequent EIR for the South Orange County Infrastructure Improvement Project TCA EIR 4 (December 2005).</p>
Transit and Local Road Projects					
9	Laguna Niguel Rail Station Parking Expansion	Construction of 562 new parking spaces in addition to the existing 281 spaces for a total of 843 spaces	OCTA	This project is scheduled to be operational in 2013.	<p>This project required the acquisition of 1.74 acres of property formerly owned by Caltrans that have been used as a staging and lay-down yard for the Metrolink Service Expansion Program. Therefore, this project would not contribute to cumulative effects.</p> <p>Source: OCTA Final LRTP (2010) and OCTA Agreement for Construction of Parking Lot at Laguna Niguel/Mission Viejo Metrolink Station Staff Report (January 10, 2013)</p>
10	Crown Valley Parkway Widening	Add a fourth through lane on Crown Valley Parkway between Cabot Road and the I-5 northbound ramps and widen the bridges over I-5 and the railroad tracks	Cities of Mission Viejo and Laguna Niguel	This project is under construction.	<p>Because this project would be completed prior to construction of the Build Alternatives, it would not contribute to cumulative effects.</p> <p>Source: City of Mission Viejo Capital Improvement Program (http://cityofmissionviejo.org/DepartmenPage.aspx?id=1338, website accessed January 27, 2013).</p>
11	Cabot Road to Camino Capistrano Bridge Project	This project would provide alternate access to the Metrolink Station and would provide relief to the I-5/Avery Parkway interchange	City of Mission Viejo	Information on the status of this project was not available at the time the cumulative impact analysis was conducted.	<p>Less than significant impacts with mitigation: aesthetics (light and glare); biological resources (plant and animal species, riparian and other habitats, and conflict with an NCCP/HCP); cultural resources (archeological, paleontological, human remains); geology and soils (seismic groundshaking, liquefaction, and unstable and/or expansive soils); and hazard and hazardous materials (release of hazardous materials).</p> <p>Less than significant or no effects: aesthetics (scenic vistas and resources, and degradation of existing views); agriculture and forestry resources; air quality; biological resources (protected waters and wildlife movement); cultural resources (historic); geology and soils (earthquake rupture, landslides, erosion, and alternative waste disposal); GHG emissions; hazards and hazardous materials (use, etc. of hazardous materials, schools, listed sites, airports, emergency response plans, and wildfires); hydrology and water quality; land use and planning; mineral resources; noise; population and housing; public services; recreation; transportation/traffic; and utilities and services.</p> <p>Source: Public Review Draft IS/MND Cabot-Camino Capistrano Bridge Project (RBF Consulting, December 2011).</p>
12	Oso Parkway Widening	Widen existing Oso Parkway from three to four lanes in each direction between I-5 and Country Club Drive	City of Mission Viejo	The project is currently being designed. Construction is scheduled to begin in summer 2013 and be completed in 2015.	<p>No information on the environmental impacts of this project was available at the time this cumulative impacts analysis was conducted.</p> <p>Source: City of Mission Viejo Capital Improvement Program (http://cityofmissionviejo.org/DepartmenPage.aspx?id=1338, website accessed January 27, 2013).</p>

Table 2.21-2 List of Cumulative Projects and Potential Environmental Effects

ID No.	Project Title	Project Description	Lead Agency	Project Status	Potential Project Impacts and Data Sources ¹
13	La Paz Road Widening	Widen bridge from four to six lanes from Muirlands Boulevard/Interstate 5 to Chrisanta Drive	City of Mission Viejo	A Categorical Exclusion/Exemption was obtained in March 2005. To commence construction Summer 2013. Anticipated completion in 2014.	The project was categorically excluded/exempted and therefore has no substantial environmental effects. Source: City of Mission Viejo, personal communication on April 3, 2013.
City of Mission Viejo Local Development Projects					
No approved or planned local development projects in the City of Mission Viejo were identified in the vicinity of the proposed project at the time this cumulative impacts analysis was conducted.					
City of Laguna Niguel Local Development Projects					
14	Laguna Niguel Gateway Specific Plan	Up to 2,994 dus and 2,259,931 sf of nonresidential uses are proposed for this 315 ac Specific Plan area. The Specific Plan area is south of Oso Parkway, east of I-5, west of SR-73, south of the SR-73/I-5 interchange.	City of Laguna Niguel	Information on the status of this project was not available at the time the cumulative impact analysis was conducted.	Less than significant impacts with mitigation: aesthetics (shade/shadow and light and glare); odors; biological resources (plant and animal species, riparian and other natural communities, and protected waters); cultural resources (archeological and paleontological); GHG emissions; hazards and hazardous materials (release of hazardous materials, listed hazardous materials sites, and emergency response/evacuation plans); drainage alteration; short- and long-term noise and vibration; public services (emergency services and access); and transportation/traffic (emergency access). Significant unavoidable adverse impacts: air quality (short- and long-term and cumulative); rail noise impacts on project residents; and transportation/traffic (conflict with plan for measuring system effectiveness and congestion management plan) Less than significant or no impacts: scenic vistas; conflict with implementation of an air quality plan or local policies or ordinances protecting biological resources; human remains; geology and soils; hazards and hazardous materials (use, etc. of hazardous materials, near schools, and wildland fires); hydrology and water quality (flood, mudflow, waste discharged, and groundwater supplies); land use and planning (conflict with land use plans, policies, or regulations); permanent increase in long-term noise levels; population and housing (growth); public services (police, schools, and recreation facilities); transportation/traffic (alternative modes); and utilities and service systems. Source: Laguna Niguel Gateway Specific Plan PEIR (Atkins, July 2011).
15	Camden Three Flags Apartments	This project would provide 475 apartments on a site north of Crown Valley Parkway, south of Vista Viejo Road, west of Cabot Road, and east of Camino Capistrano and I-5.	City of Laguna Niguel	This project is in the planning preapplication phase	No information on the environmental impacts of this project was available at the time this cumulative impacts analysis was conducted. Source: City of Laguna Niguel http://www.cityoflagunaniguel.org/DocumentCenter/Home/View/7381
16	The Crown Apartments	This project would provide 284 apartments north of Crown Valley Parkway, west of Cabot Road, and east of Greenfield Drive	City of Laguna Niguel	This project is in the grading plan check phase	No information on the environmental impacts of this project was available at the time this cumulative impacts analysis was conducted. Source: City of Laguna Niguel http://www.cityoflagunaniguel.org/index.aspx?NID=717
17	Forbes Investment Mixed Use	This project would provide 325 apartments and 5,000 sf of retail on a site north of Crown Valley Parkway, west of I-5 at Getty Drive, and Cape Drive.	City of Laguna Niguel	Information on the status of this project was not available at the time the cumulative impact analysis was conducted.	No information on the environmental impacts of this project was available at the time this cumulative impacts analysis was conducted. Source: City of Laguna Niguel http://www.cityoflagunaniguel.org/DocumentCenter/Home/View/7381
18	Career Lofts	This project would provide 142 apartments on a site east of Cabot Road, west of SR-73, and north of Paseo de la Colinas.	City of Laguna Niguel	This project is in the grading plan check phase	No information on the environmental impacts of this project was available at the time this cumulative impacts analysis was conducted. Source: City of Laguna Niguel http://www.cityoflagunaniguel.org/DocumentCenter/Home/View/7381

Table 2.21-2 List of Cumulative Projects and Potential Environmental Effects

ID No.	Project Title	Project Description	Lead Agency	Project Status	Potential Project Impacts and Data Sources ¹
City of Laguna Hills Local Development Projects					
19	Oakbrook Village	This project is the redevelopment of the Oakbrook Village shopping center (east of I-5 and Avenida de la Carlota and south of Laguna Hills Mall) in two phases. It would include development of up to 489 dus (289 dus in Phase I and 200 dus in Phase II) in multistory residential buildings and up to 82,574 sf of retail space (23,974 sf in Phase I and 58,600 sf in Phase II)	City of Laguna Hills	Phase I is scheduled to be operational by December 2013. Construction of Phase II is scheduled to start when Phase I is completed and to be operational by December 2016.	<p>Less than significant impacts, less than significant impacts with mitigation, or no changes or new information (compared to the General Plan Update EIR) requiring the preparation of an EIR: aesthetics and light and glare; short-term air quality; wildlife movement (migratory birds); cultural resources (except human remains); geology and soils; hazardous materials and wastes (except safety hazards related to aviation facilities and listed hazardous materials sites); hydrology and water quality (except related to floods, tsunami, seiche, and mudflow); land use (except related to NCCPs/HCPs); noise except related to airport noise); growth; public services; recreation; transportation/traffic (except aviation); and utilities and service systems.</p> <p>Significant unavoidable adverse impacts after mitigation: obstruct implementation of an air quality plan; long-term air quality emissions; and GHG emissions.</p> <p>No impact: agriculture and forest resources; biological resources except wildlife movement; cultural resources (human remains); hazards related to aviation facilities and listed hazardous materials sites; hydrology related to floods, tsunamis, seiches, and mudflows; land use related to NCCPs/HCPs; mineral resources; airport noise; displacement of residents or residential uses; and changes in aviation traffic patterns.</p> <p>Source: Addendum to the: City of Laguna Hills General Plan Update EIR – Oakbrook Village Residential Project (The Planning Center, October 2012).</p>
City of Lake Forest Local Development Projects					
No approved or planned local development projects in the City of Lake Forest were identified in the vicinity of the proposed project at the time this cumulative impacts analysis was conducted.					
County of Orange Development Projects					
-- See Note 1 at end of table	Rancho Mission Viejo Ranch Plan (not shown on Figure 2.21.2; it is approximately 3.5 miles east of the southern part of the project segment of I-5)	This project would develop the 22,815 ac property located east of the Cities of Mission Viejo and San Juan Capistrano in unincorporated Orange County. The RMV Ranch Plan would provide 14,000 dus and 5.2 million sf of retail and business uses on 5,842 gross ac. The Plan also includes a golf course on 25 gross ac and 16,942 ac of open space. The widening of SR-74 from two to four lanes is included in Planning Area 1 in the RMV Ranch Plan.	County of Orange	The County of Orange approved this project in 2004. Implementation of the project would be phased over 20 to 25 years.	<p>No information on the environmental impacts of this project was available at the time this cumulative impacts analysis was conducted.</p> <p>Source: Rancho Mission Viejo.com</p>

Sources: As noted above in the column titled "Potential Project Impacts and Data Sources."

Note 1: Two projects located farther than 2 mi from the project segment of I-5 are included in this Table 2.21-2 but are not shown on Figure 2.21-1. The Rancho Mission Viejo (RMV) Ranch Plan is an approved plan for the development of the approximately 22,800 ac RMV property which is approximately 3.5 mi east of the southern part of the project segment of I-5. The RMV Ranch Plan is the largest development plan in this part of Orange County and, as a result, was included in the cumulative projects. The South Orange County Transportation Infrastructure Project is the proposed extension of the existing Foothill Transportation Corridor from its existing terminus at Oso Parkway south to Pacific Coast Highway. The proposed extension of the FTC is parallel to and approximately three mi east of the southern part of the project segment of I-5. The FTC extension project is a major transportation project in south Orange County and, as a result, was included in the cumulative projects.

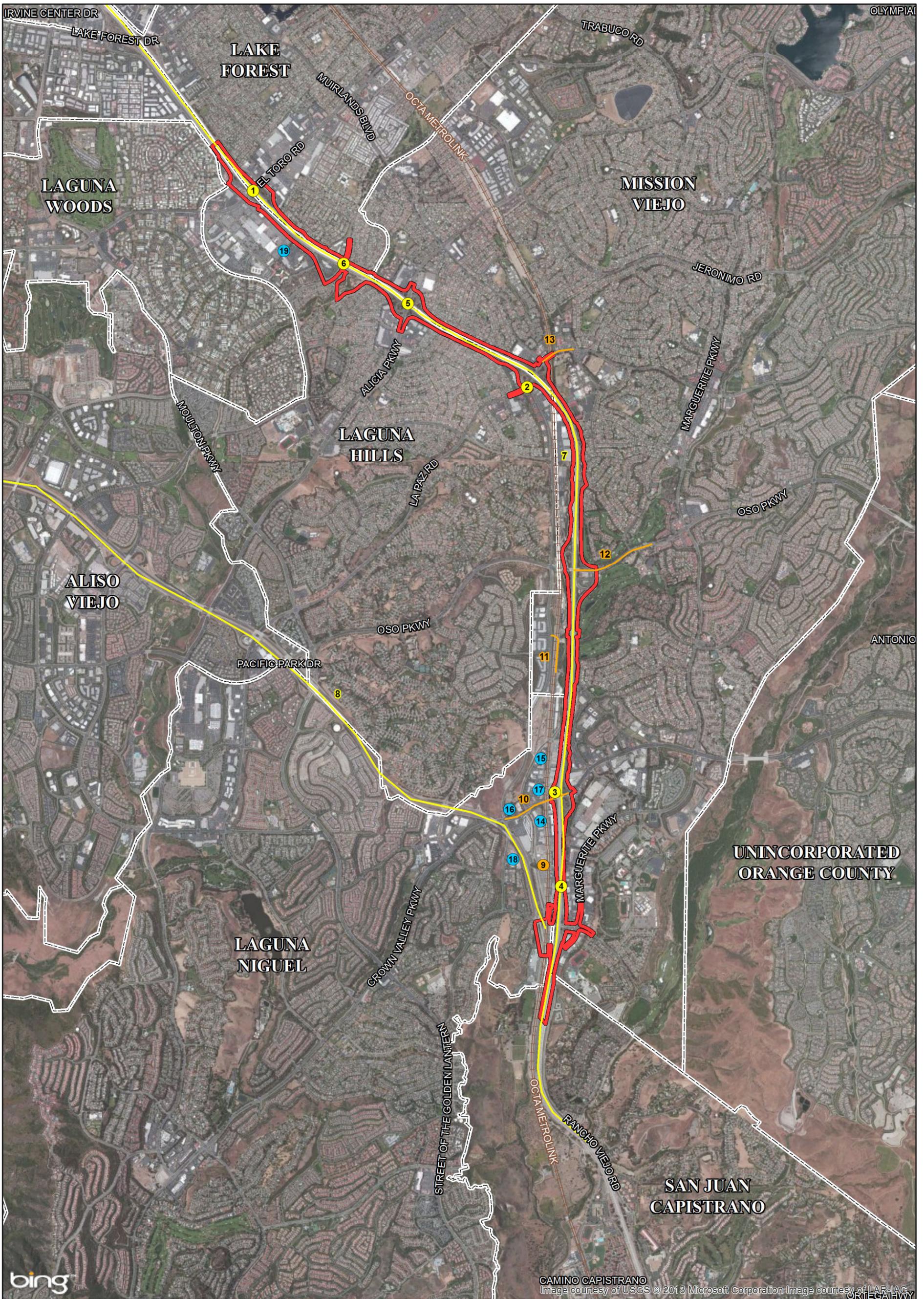
¹ Conclusions regarding significance are related to compliance with CEQA and not NEPA.

ac = acre, acres
 Caltrans = California Department of Transportation
 CO = carbon monoxide
 dus = dwelling units
 EA = Environmental Assessment
 EIR = Environmental Impact Report
 FTC = Foothill Transportation Corridor
 FY = fiscal year
 GHG = greenhouse gas
 HC = hydrocarbons
 HCP = Habitat Conservation Plan
 HOV = high occupancy vehicle

I-5 = Interstate 5
 IS = Initial Study
 LUST = leaking underground storage tank
 MCAS = Marine Corps Air Station
 MND = Mitigated Negative Declaration
 NCCP = Natural Communities Conservation Plan
 NOX = nitrogen oxide
 NRHP = National Register of Historic Places
 OCTA = Orange County Transportation Authority
 OSA = Opportunities Study Area
 PEIR = Program Environmental Impact Report
 PM10 = particulate matter less than 10 microns in size

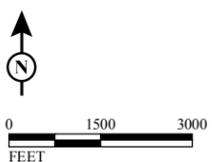
RMV = Rancho Mission Viejo
 SCAB = South Coast Air Basin
 SCAQMD = South Coast Air Quality Management District
 sf = square feet
 SR-73 = State Route 73
 SR-74 = State Route 74
 SR-241 = State Route 241
 TCA = Transportation Corridor Agencies
 tce, tces = temporary construction easement, easements
 VOC = volatile organic compound

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LEGEND

- Project Location
- City Boundary
- Project Type with ID#
- Local Development
- Freeway & Toll Road
- Transit & Local Road



SOURCE: Bing Maps (c.2010)

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FIGURE 2.21-1

I-5 Widening Project: SR-73 to El Toro Road
Locations of Cumulative Projects

12-ORA-5 PM 12.4/18.9
EA# 0K0200

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