

## 2.15 Cumulative Impacts

### 2.15.1 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 Study Area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive 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 necessary 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.

### 2.15.2 Methodology

The cumulative impact analysis methodology utilized was based on the eight-step process set forth in the California Department of Transportation (Caltrans) *Standard Environmental Reference (SER) Guidance for Preparers of Cumulative Impact Analysis* (2005). The eight-step process is as follows:

- Identify resources to be analyzed
- Define the study area for each resource (i.e., the Resource Study Area [RSA])
- Describe the current health and historical context for each resource
- Identify both direct and indirect impacts of the Build Alternatives (including Design Option B)
- Identify other reasonably foreseeable actions that affect each resource
- Assess potential cumulative impacts
- Report results
- Assess the need for mitigation

Table 2.15.1 lists local planned projects, which are considered in this cumulative impact analysis, and the locations of these projects are illustrated in Figure 2.15-1, Cumulative Projects.

### 2.15.3 Resources Excluded from Cumulative Impacts Analysis

As specified in the Caltrans guidance, if the Build Alternatives (including Design Option B) would not result in direct or indirect impacts to a resource, it would not contribute to a cumulative impact on that resource and need not be evaluated with respect to potential cumulative impacts.

All the projects listed in Table 2.15-1 are proposed to complete construction prior to the start of construction of the Build Alternatives (including Design Option B); hence, most of the resources have resulted in no cumulative impacts. Resources for which cumulative effects are not anticipated or for which the impacts were already analyzed in a cumulative context (e.g., traffic, air quality, and noise) are briefly discussed below.

- **Coastal Zone:** The Study Area is not located within the Coastal Zone. Therefore, the Build Alternatives and Design Option B would not contribute to cumulative adverse impacts to coastal zones.
- **Wild and Scenic Rivers:** No wild and scenic rivers are located within the Study Area. Therefore, the Build Alternatives and Design Option B would not contribute to cumulative adverse impacts to wild and scenic rivers.
- **Farmlands/Timberlands:** No farmlands or timberlands are located within the Study Area. Therefore, the Build Alternatives and Design Option B would not contribute to cumulative adverse impacts to farmlands or timberlands.
- **Mineral Resources:** There are no mineral resources located within or adjacent to the Study Area. Therefore, the Build Alternatives and Design Option B would not contribute to cumulative adverse impacts to mineral resources.
- **Land Use:** The Build Alternatives and Design Option B 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/EI Toro Road Interchange. This impact would be avoided and/or minimized based on implementation of Measure LU-4. As a result, the Build Alternatives and Design Option B would not contribute to cumulative effects to General Plan Land Use designations. In addition, the Build Alternatives and Design Option B would not result in permanent direct or indirect temporary or permanent adverse impacts related to consistency with existing plans and policies, and, as a result, would not contribute to cumulative adverse impacts related to consistency with plans and policies.

**Table 2.15.1: Planned Projects List**

ID Number	Name	Jurisdiction	Planned Uses	Status
<b>Development Projects</b>				
1	Five Lagunas	24155 Laguna Hills Mall, Laguna Hills	Redevelopment of the Laguna Hills Mall, including demolition of 449,000 square feet of existing building area, construction of 410,000 square feet of new commercial buildings, construction of a six-story parking structure with over 1,500 parking stalls, development of three multifamily buildings with 988 dwelling units, and the installation of various signs (including a free-standing 75-foot-tall freeway sign).	Entitlement plans approved by the City of Laguna Hills in 2016.  The Developer is revising their March 2016 plans and will resubmit to the City at a future date for approval.
2	Oakbrook Village	24231 Avenida De La Carlota, Laguna Hills	Redevelopment of the Oakbrook Village Shopping Center with a two-phased mixed-use development including up to 489 residential dwelling units (289 in Phase 1 and up to 200 in Phase 2) in multistory buildings, and construction of 82,575 square feet of new commercial/retail space (23,974 in Phase 1 and 58,600 in Phase 2), along with building façade enhancements, pedestrian walkways, landscaping, and connectivity to Five Lagunas.	Nearing completion of construction of Phase 1. Awaiting submittal of entitlement plans for Phase 2.
3	Saddleback Utilities Plant	24451 Health Center Drive, Laguna Hills	Construction of a new central utilities plant on the Saddleback Memorial Medical Center Campus, including demolition of the existing utilities plant, modifications to parking and landscaping, and addition of underground storage tanks for water, sewage, and fuel.	Entitlement plans approved by City. Awaiting submittal of construction plans.

**Table 2.15.1: Planned Projects List**

<b>ID Number</b>	<b>Name</b>	<b>Jurisdiction</b>	<b>Planned Uses</b>	<b>Status</b>
<b>Transportation Projects</b>				
4	El Toro Road Traffic Signal Synchronization Project	El Toro Road between Bells Vireo Lane in the City of Aliso Viejo and the I-5 NB off-ramp	Installation of video detection system, uninterruptable power supply assembly and ethernet switches.	Estimated completion of the construction is June 2019.
5	I-5 Slope Revegetation Exposed Slopes for NPDES and Sources Control	On I-5 from Lake Forest Drive to Bake Parkway	Revegetation of exposed slopes to control sediment sources \ for NPDES concerns and source control The work will include the use of hydroseeding, and/or the installation of the following: groundcover, slope paving, rock blankets, dike, and paved ditch to collect and divert concentrated flow.	Estimated completion of the construction is February 2019.
6	I-5 (406-55) Improvement Project.	On I-5 from SR-55 to El Toro Road Interchange	Construct one general purpose lane in each direction from I-405 to SR-55. Includes minor improvements at the El Toro Road Interchange to provide for transition to the lane addition.	Estimated completion of the construction is September 2024.
7	Southbound SR-133/Southbound I-5 Connector Project	Southbound SR-133 between I-405 and I-5 in City of Irvine	Extend the Number Four lane on Southbound SR-133 from Southbound I-5 connector and add a second lane to northbound I-405 Connector.	Estimated completion of the construction is March 2024.
8	Non-SHOPP SR-133/Great Park BI Interchange Project	City of Irvine	Construct a new interchange with the SR-133 tollway	Estimated completion of the construction is November 2025.
9	SR-133/Venta Spur Overcrossing Project	Venta Spur Trail Bicycle and Pedestrian Bridge over SR-133 in City of Irvine	Construct an overcrossing to provide a Class I bicycle and pedestrian connection of the Venta Spur Trail across SR-133 and Marshburn Channel	Estimated completion of the construction is April 2023.

Sources: Email Communications with Cities of Laguna Hills, Laguna Woods and Mission Viejo (2018); Caltrans Internal Planned Projects Database (2018). SHOPP = State Highway Operation and Protection Program

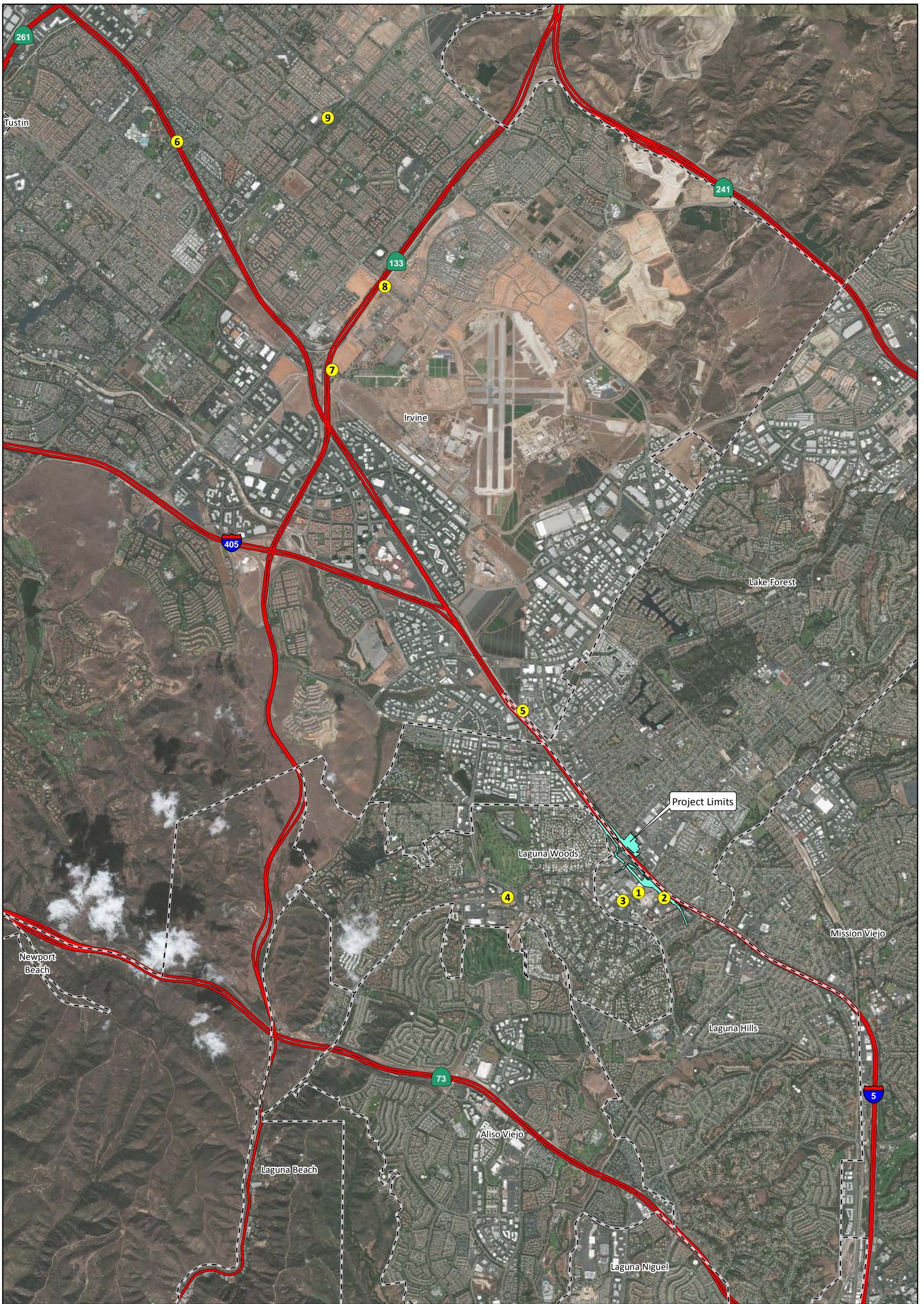
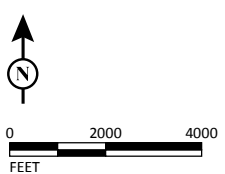


FIGURE 2.15-1

LEGEND

- Project Limits
  - Location of Planned Projects
1. Refer to Table 2.17-1 for detailed information of the planned projects.
  2. The locations are plotted on the figure are based on available information.



SOURCE: Esri (2018); Caltrans (10/3/2018)

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*I-5/El Toro Road Interchange Project*  
Locations of Cumulative Projects

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- **Parks and Recreation:** The Build Alternatives (including Design Option B) would result in the permanent partial acquisition of land from Cavanaugh Mini Park, which is outside of existing Caltrans right-of-way. However, the park facilities of this mini park would be relocated to the adjacent open space area (Gowdy Park) and these facilities would continue to be available to the community. The acreage required from this property for the Build Alternatives (including Design Option B) 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 (including Design Option B) would not contribute to a permanent cumulative adverse impact related to recreation resources.
- **Growth:** The Build Alternatives (including Design Option B) would improve existing and future traffic operation, reduce congestion, and accommodate existing and future planned growth that would occur with or without the Build Alternatives. The Build Alternatives (including Design Option B) do not include growth or remove obstacles to growth in the area and; therefore, would not contribute to cumulative adverse impacts related to growth.
- **Community Impacts:** The Build Alternatives (including Design Option B), in and of itself, would not contribute cumulatively negative impacts to the Study Area and adjacent communities, in fact, the Build Alternatives (including Design Option B) support and enhance community development. As a result, no cumulative analysis for community character and cohesion is warranted. However, Cavanaugh Park and St. George Episcopal Parish/Church are identified as important community features. Minimization measures relating to Cavanaugh Park are proposed (see Section 2.1 and Appendix A) and Project Feature PF-TRA-1 would address temporary impacts to St. George Episcopal Parish/Church as provided in Section 2.2, Community Impacts to ensure the continued viability of each.
- **Utilities and Emergency Services:** Construction of the Build Alternatives (including Design Option B) may result in temporary service disruptions to some utilities in the area; however, all utility lines would be relocated according to an approved utility relocation plan, near the current configuration and would be permanently maintained. Although partial and full lane closures may be required during construction, detours would be provided to direct traffic, including emergency vehicles, per the TMP, identified as PF-TRA-1 in Section 2.4. Although fire, police, and emergency medical service providers could experience travel delays while traveling to/from emergency scenes around the I-5/EI Toro Road Interchange, all temporary closures and detour plans would be coordinated with emergency service providers to minimize temporary delays in response times (PF-UES-1). In addition, , the TMP would require coordination between the cities of Lake Forest, Laguna Woods, Laguna Hills, Laguna Niguel, and other adjacent cities (PF-UES-2). If construction is delayed, there is a potential for construction of the identified cumulative projects to occur simultaneously with the Build Alternatives (including Design Option B). However, since most of these projects are Caltrans District 12 projects, Caltrans would coordinate with the traffic handling and detours associated with these projects in a manner that

minimizes delay, closures and public disruption along I-5. For those projects that are not Caltrans projects, those jurisdictions would implement their own measures to address short-term construction effects on utilities and emergency services. Because the construction schedule and all detours and closures would be coordinated internally within Caltrans and with local jurisdictions and emergency service providers, the Build Alternatives (including Design Option B) would not contribute to cumulative adverse impacts to utility facilities or to the provision of emergency services.

- **Traffic/Transportation:** The Build Alternatives (including Design Option B) would improve interchange traffic operations, and pedestrian and bicycle facilities. The analysis of future traffic conditions in Section 2.4.5, Traffic and Transportation/Pedestrian and Bicycle Facilities of this Initial Study/Environmental Assessment for 2030 (Opening Year) and 2050 (Horizon Year) is a cumulative analysis. The analysis considers traffic generated by existing and future planned land uses and the effect of future planned transportation improvements. This analysis determined that the Build Alternatives (including Design Option B) would result in improved traffic conditions as compared to the No Build Alternative. Therefore, the Build Alternatives (including Design Option B) would not contribute to long-term cumulative adverse effects to traffic operations, and pedestrian and bicycle facilities. Short-term effects during construction are anticipated; however, the implementation of PF-TRA-1 would address short-term construction related impacts on vehicular, pedestrian and cycling movements.
- **Cultural Resources:** Construction of the Build Alternatives would not impact known cultural resources or cultural resources on or eligible for listing on the National Register of Historic Places. While the identified cumulative projects could affect cultural resources outside the project limits, the Build Alternatives would not directly or indirectly impact any significant cultural resources and, therefore, would not contribute to cumulative adverse impacts related to cultural resources.
- **Hydrology and Floodplains:** No floodplains exist within the Study Area; therefore, the Build Alternatives (including Design Option B) would not encroach into any floodplains or substantially change the hydrology of the Study Area. Therefore, the Build Alternatives and Design Option B would not contribute to cumulative adverse impacts to hydrology and floodplains.
- **Water Quality:** As described in Section 2.7, Water Quality and Stormwater Runoff, runoff from the Study Area discharges to Aliso Creek and San Diego Creek watersheds, which could be impacted by construction of the Build Alternatives (including Design Option B). Any temporary construction-related impacts to Aliso Creek or San Diego Creek would be addressed through the implementation of Project Features PF-WQ-2 and PF-WQ-3, which require compliance with the NPDES Construction General Permit and preparation of a Storm Water Pollution Prevention Plan (SWPPP), respectively. The Build Alternatives (including Design Option B) would have a net increase in impervious surfaces that would include the construction of permanent best management



practices (BMPs), as described in Project Features PF-WQ-4 and PF-WQ-5, to target pollutants of concern and reduce the volume and velocity of storm water prior to discharge. The Build Alternatives would comply with the requirements of the NPDES Construction General Permit, the Caltrans National Pollutant Discharge Elimination System (NPDES) permit requirements, the Caltrans Storm Water Management Plan (SWMP), and would implement BMPs to target pollutants of concern in stormwater runoff during construction and operation. In addition, all projects within Aliso Creek and San Diego Creek watershed would be required to comply with applicable permit requirements to reduce impacts to water quality during construction and operation. As a result, the Build Alternatives (including Design Option B) would not contribute to cumulative adverse impacts related to water quality.

- **Geology/Soils/Seismic/Topography:** As discussed in Section 2.8, Geology/Soils/Seismicity/Topography, construction activities under the Build Alternatives (including Design Option B) would disturb soil. Temporary effects of those activities would include soil compaction and an increased possibility of soil erosion.

The Build Alternatives (including Design Option B) are expected to have minimal effect on geologic and topographic conditions. However, design and construction of the Build Alternatives (including Design Option B) could be constrained by seismic shaking, landslides, slope instability, liquefaction, erosion, and corrosion.

There are no known active or potentially active surface faults within the Study Area. In addition, the Study Area is not located in the vicinity of any mapped Special Studies Zone or with 1,000 ft of a historically active unzoned fault. Therefore, the potential for ground rupture is considered to be low. There is potential for moderate to severe seismic shaking during the life of the improvements in the Build Alternatives (including Design Option B). The Build Alternatives (including Design Option B) would implement Project Features into PF GEO-1 during design and construction to accommodate expected ground accelerations, which would minimize the potential for structural damage due to seismic events.

Although the embankments could experience seismically induced lateral deformations depending on depth, areal extent, post-liquefaction, residual strength of the potentially liquefiable layers, it is determined that such deformations would be minor. Implementation of Project Feature PF-GEO-1 and minimization measure GEO-2 would ensure that there are no direct or indirect permanent adverse effects under the Build Alternatives and Design Option B due to landslides or slope instability.

Project Feature PF-GEO-1 and minimization measure GEO-2 would address and avoid and/or minimize short- and long-term geotechnical effects under the Build Alternatives (including Design Option B). Because the Build Alternatives (including Design Option B) would not result in effects related to geology, soils, seismicity, and topography, they would not contribute effects related to those parameters. Therefore, the Build Alternatives and Design Option B would not contribute to cumulative adverse effects to these resources.

**Paleontological Resources:** The RSA for paleontological resources includes area where excavation would occur for the Build Alternatives (including Design Option B). Geologic mapping and the results of the locality search through the Natural History Museum of Los Angeles County (LACM) and the San Diego Natural History Museum (SDNHM) indicate the RSA contains Holocene to late Pleistocene, (less than 126,000 years ago) Young Axial Channel Deposits, Holocene to late Pleistocene Young Alluvial Fan Deposits, middle to early Pleistocene (126,000 years ago to 2.58 Million Years Ago [Ma]) Very Old Axial Channel Deposits, middle to early Pleistocene Very Old Alluvial Fan Deposits, the Pliocene (2.588–5.333 Ma) Niguel Formation, and the Miocene (5.333–23.03 Ma) Monterey Formation. In addition to these Alluvial Fan Deposits, Artificial Fill is mapped along I-5 in the northern portion of the project limits, and likely underlies other portions of the project limits that have been previously developed.

As discussed in Section 2.9, the LACM and SDNHM believe that any excavation activities in the older, Pleistocene sediments of the Young Axial Channel Deposits and the Young Alluvial Fan Deposits, the Very Old Axial Channel Deposits, the Very Old Alluvial Fan Deposits, the Niguel Formation, and the Monterey Formation have the potential to impact paleontological resources, and should be closely monitored to quickly and professionally recover any fossil remains while not impeding development. However, the majority of sediments underlying the proposed limits contain disturbed sediments (Artificial Fill) where there would not be scientifically significant paleontological resources.

Replacing the existing soundwalls along the northbound on-ramp and southbound off-ramp in both Alternative 2 and 4 would require piles estimated to be 16 inches in diameter and approximately 16 ft deep (personal communication, Caltrans, July, 2018). As this excavation is expected to extend deeper than ten ft below the original ground surface, it is likely that older sensitive sediments that might contain paleontological resources would be encountered. The construction of Alternative 2 or 4 would require similar ground disturbance, excavation, and modifications to existing freeway and local street facilities and structures. As described in Section 2.9, excavation depths for roadway construction are expected to extend up to approximately 7 feet (ft) for the Build Alternatives. Landscaping for both of the Build Alternatives (including Design Option B) would require excavations to depths of up to approximately 2 ft, and the drainage features for both Build Alternatives would require excavations to depths of approximately 4–5 ft. Excavation to a maximum depth of approximately 6 ft would be required to relocate utilities for the Build Alternatives (including Design Option B). With implementation of Measure PAL-1, potential effects to paleontological resources would be avoided and/or minimized.

The Build Alternatives (including Design Option B) and other projects in the vicinity of the project limits could disturb sensitive sediments that may contain paleontological resources; thus contributing to cumulative impacts to paleontological resources. Projects such as Saddleback Utilities Plant, SR-133 Projects (Project IDs 6 and 7), and the SR-133/Great Park Boulevard Project would potentially excavate in previously undisturbed areas and could, in conjunction with nearby construction requiring ground disturbance, contribute

cumulatively to impacts on paleontological resources. However, impacts to paleontological resources as a result of other projects would depend on the depth of excavation, if excavation is required, and the presence of sensitive sediments. Additionally, the project limits and the surrounding environment are urbanized and largely underlain by disturbed sediments (Artificial Fill). The potential to encounter paleontological resources would be highly dependent on factors mentioned previously, and the potential to encounter paleontological resources during construction activities would be minimal. Therefore, the Build Alternatives (including Design Option B), in combination with other planned projects, would not result in substantial cumulative impacts to paleontological resources.

- **Hazardous Waste/Materials:** As discussed in Section 2.10, Hazardous Waste/Materials, the analysis of the potential hazardous waste and materials effects of the Build Alternatives (including Design Option B) indicate potential concerns during construction related to: 1) disturbance of potentially contaminated soil and/or groundwater; 2) presence of ADL in soils adjacent to roads; 3) presence of ACMs and LBP in bridges and structures that would be demolished or renovated; 4) potential for elevated concentrations of metals such as lead in yellow traffic striping and pavement-marking materials; and 5) presence of unknown contaminants, or PCBs in transformers and/or electrical equipment. Project Features PF-HAZ-1 through PF-HAZ-3 and Minimization Measures HAZ-1 through HAZ-4 address potential effects related to encountering hazardous waste and/or materials prior to and during construction. The Build Alternatives (including Design Option B) would not result in adverse effects related to hazardous waste and materials. As a result, the Build Alternatives (including Design Option B) would not contribute to cumulative adverse effects related to hazardous wastes and materials.
- **Air Quality:** Construction activities related to the Build Alternatives (including Design Option B) would not last for more than 3 years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis. With implementation of Project Features PF-AQ-1 through PF-AQ-3, construction-related emissions would not be substantial and are unlikely to contribute to cumulative air quality issues. Additionally, cumulative construction impacts for projects under concurrent development within the vicinity of the Build Alternatives have been included in air quality and greenhouse gas modeling as indicated in the Air Quality Report (January 2019).

During operation, both Alternative 2 and 4 would result in very small increases in long-term regional vehicle air emissions compared to the No Build Alternative. However, the increase in emissions was accounted for in the conforming RTP/SCS and conformity budget that is used for attainment of the standards. Because the Build Alternatives (including Design Option B) conform, the Build Alternatives would have no adverse impact to air quality and would therefore, not contribute substantially to regional vehicle emissions. As described in the Air Quality Report, the Build Alternatives (including Design Option B) were

determined not to be a Project of Air Quality Concern by the Transportation Conformity Working Group.

- **Noise:** Table 2.15-1 Cumulative Projects shows that all the cumulative projects will complete construction prior to the I-5/EI Toro Road Interchange Project; hence, it is unlikely that these projects would result in any cumulative impacts. In addition, as discussed in Section 2.12, Noise and Vibration short-term construction-related worker commutes and equipment transport noise effects related to the Build Alternatives (including Design Option B) 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 75 and 84 dBA  $L_{max}$  at a distance of 50 ft from the active construction area for the grading phase. The closest sensitive receptors are within 50 ft of construction areas for each Build Alternative. Sensitive receptor locations may be subject to short-term noise higher than 86 dBA  $L_{max}$  generated by construction activities along the project limits. Project feature PF-N-1 requires compliance with Caltrans' Standard Specifications Section 14-8.02 (2018) and would address construction noise impacts on sensitive land uses adjacent to the project limits. The noise level from the contractor's operations between the hours of 9:00 p.m. and 6:00 a.m. shall not exceed 86 dBA  $L_{max}$  at a distance of 50 ft. In addition, the analysis of future noise conditions related to the Build Alternatives (including Design Option B) for 2030 (Opening Year) and 2050 (Horizon Year) is a cumulative analysis and considers all the related projects. The analysis considers existing and future planned land uses and the effect of future planned transportation improvements. This analysis determined that the Build Alternatives (including Design Option B) would result in no new soundwalls when compared to the No Build Alternative/or existing conditions.
- **Natural Communities:** As discussed in Chapter 2, no natural communities of special concern occur within the BSA. Furthermore, no wildlife corridors or crossings occur within the BSA. As a result, the Build Alternatives (including Design Option B) would not contribute to cumulative adverse effects related to natural communities and, therefore, this environmental topic was not evaluated further in this analysis.
- **Wetlands and Other Waters:** As discussed in Chapter 2, no wetlands or earthen-bottom channels occur within the BSA. Two storm-drain features (D-1 and D-2) were identified near the I-5/EI Toro Road Interchange. However, under current design of the Build Alternatives, no aboveground (i.e. v-ditches, channels) would be affected by the Build Alternatives (including Design Option B). Therefore, the Build Alternatives would not contribute to cumulative adverse effects related to wetlands and other waters.
- **Plant Species:** As discussed in Chapter 2, a total of 11 special-status species were identified as having the potential to occur within the BSA (three of which are Federally threatened). However, the BSA is highly developed and no special-status plant species were observed within the BSA or are expected to occur within the BSA. Therefore, the Build Alternatives (including Design Option B)

would not contribute to cumulative adverse effects related to special-status plant species and this environmental topic was not evaluated further in this analysis.

- **Animal Species:** As discussed in Section 2.11 Animal Species, the BSA is highly developed with no natural plant communities or wetlands. No special-status species were observed during the BSA during preliminary surveys. Although the two special-status species may occur within the BSA (Cooper's hawk and white-tailed kite), Project Features would be implemented to avoid potential impacts to bird species. Furthermore, the Build Alternatives (including Design Option B) propose to remove ornamental trees and vegetation, which may provide nesting and foraging habitat for these special-status bird species, but with implementation of Project Features the Build Alternatives (including Design Option B) would not contribute to cumulative adverse effects related to special-status species.
- **Threatened and Endangered Species:** Based on the NES-MI, USFWS, NMFS, and CNDDDB species lists acquired for the proposed project, a total of nine federal and three State listed species were identified as having potential to occur within the general vicinity of the BSA. However, no federal or State listed species were observed within the BSA during project surveys, nor are they expected to occur within the BSA based on lack of suitable habitat and known distributions.  
  
The NMFS Species List identified sixteen special-status species/essential fish habitats with potential to occur within the general vicinity of the BSA. However, no threatened or endangered NMFS species were observed within the BSA nor are any expected to occur within the BSA.  
  
A “no effect” finding was determined for all Federally listed species on both the USFWS and NMFS species lists. Therefore, the Build Alternatives (including Design Option B) would not impact threatened or endangered species and would not contribute to cumulative adverse effects related to threatened and endangered species.
- **Invasive Species:** The Build Alternatives (including Design Option B) would not substantially increase the potential for the spread of invasive species. Compliance with minimization measures BIO-5 and BIO-6 would address impacts related to invasive species. Therefore, the Build Alternatives (including Design Option B) would not contribute to cumulative adverse effects related to invasive species.

## 2.15.4 Resources Evaluated for Cumulative Impacts

### 2.15.4.1 Visual/Aesthetics

The Resource Study Area for visual/aesthetics is the vicinity surrounding the project limits. The RSA is located in an urban area and surrounds commercial, residential, civic, community park/open space, and transportation uses. The location of the Build Alternatives (including Design Option B) establishes the context for determining the impact of proposed changes to the existing visual setting. Visual impacts as a result of the construction and implementation of the Build Alternatives (including Design

Option B) include key views that represent public views from both public right-of-way and publicly accessible areas located within and adjacent to the project limits, as indicated in the Visual Impact Assessment (January 2019). Visual impacts related to the Build Alternatives (including Design Option B) would occur within the vicinity of the project limits.

Temporary impacts resulting from the construction of the Build Alternatives (including Design Option B) would include exposure of sensitive uses to views of the project limits. Construction of the Build Alternatives would expose surfaces, construction debris, equipment, and truck traffic to nearby sensitive viewers. Additionally, construction vehicle access and staging of construction materials would be visible from motorists traveling along the project limits as well as residential, commercial and civic, and recreational uses in the vicinity of the project limits. However, these impacts would be short-term and would cease upon completion of construction. The Build Alternatives (including Design Option B) would also require nighttime construction activities. Nighttime construction lighting could potentially result in impacts to nearby residents and motorists traveling within the Study Area. These activities may be required to take place for several months. As discussed in Section 2.5, Visual and Aesthetics, implementation of measure VIS-1 addresses light and glare from nighttime construction activities.

As it is not feasible to analyze all the views in which the Build Alternatives (including Design Option B) would be seen, key views were selected that would most clearly demonstrate the change in the visual resources of the Build Alternatives (including Design Option B). Key views also represent the viewer groups that have the highest potential to be affected by the Build Alternatives considering exposure and sensitivity. Alternative 2 would result in permanent impacts to key views 2A through 2E, as discussed in 2.5, Visual and Aesthetics. The overall visual impacts of Alternative 2 would be moderate-high. Alternative 4 (including Design Option B) would result in permanent impacts to key views 4A through 4E, although the overall visual impact of Alternative 4 (including Design Option B) would be moderate. The highest visual impact rating would occur from Key View 4C. This represents a typical view looking south towards the existing Five Lagunas shopping center (formerly Laguna Hills Mall) parking lot for motorists and pedestrians traveling along Avenida De La Carlota. Key View 4C also represents a typical view for commercial and civic uses along Avenida De La Carlota. Implementation of Alternative 4 would remove existing commercial uses and realign a heavily landscaped portion of Avenida De La Carlota. Therefore, based on viewer response and the overall resource change, the visual impact for Key View 4C would be moderate-high.

The Build Alternatives (including Design Option B) would involve improvements to the I-5/EI Toro Road Interchange, as well as ancillary improvements to local roadways and the construction of replacement soundwalls at various locations. As discussed above, the location of the Build Alternatives establishes the context for determining the impact of proposed changes to the existing visual setting. This includes projects within the immediate vicinity of the project limits that may be visible to travelers along Avenida De La Carlota in conjunction with the Build Alternatives.

The Build Alternatives (including Design Option B) and the cumulative development projects listed in Table 2.15.1 are located within a highly developed area. As shown in Table 2.15.1, there are two projects (i.e., the Five Llagunas [formerly Laguna Hills Mall] and Oakbrook Village) in the immediate vicinity of the project limits. The Five Llagunas project (redevelopment of the Laguna Hills Mall) and Oakbrook Village project (redevelopment of the Oakbrook Village Shopping Center with a two-phased mixed-use development) would be similar in nature to the existing development at these locations. Although viewers traveling on Avenida De La Carlota may notice visual change as a result of the Build Alternatives and aforementioned cumulative development, Avenida De La Carlota is not a designated scenic corridor. The Five Llagunas and Oakbrook Village projects would be consistent with the intended land use designation for the area (the Laguna Hills General Plan designates these sites as “Village Commercial,” which allows for commercial mixed-use residential development). Thus, the Build Alternatives (including Design Option B) and their respective impacts on key views would not cumulatively contribute to a change in character/quality. Therefore, the extent of impacts resulting from cumulative development would be moderate. With implementation of measures VIS-1 through VIS-4, cumulatively considerable impacts resulting from implementation of the Build Alternatives would be addressed.

### **2.15.5 Avoidance, Minimization, and/or Mitigation Measures**

Measures to avoid, minimize, or mitigate harm resulting from construction and operation of the Build Alternatives and Design Option B are provided in Sections 2.1 through 2.15. Those measures address temporary direct and indirect effects during construction and permanent direct and indirect effects during operation of either of the Build Alternatives and Design Option B. No measures beyond those identified in Sections 2.1 through 2.15 and summarized in this section are required to address the potential contributions of the Build Alternatives and Design Option B to cumulative adverse effects.

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