2.5 Cumulative Impacts

2.5.1 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, and 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 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 the California Environmental Quality Act, can be found in Section 15355 of the California Environmental Quality Act Guidelines. A definition of cumulative impacts, under the National Environmental Policy Act, can be found in 40 *Code of Federal Regulations* Section 1508.7 of the Council on Environmental Quality Regulations

2.5.2 Approach and Methodology

The Tier I corridor analysis presented in Chapter 2 identifies the range of environmental impacts that would result from implementation of either of the Tier I Corridor Alternatives within the entire 8.9-mile corridor at a program level. If one of the Tier I Corridor Alternatives is selected, the project would be constructed in phases as funding is made available. The analysis of Tier I Corridor Alternatives cumulative impacts presents a ‘snapshot’ of information currently available at the corridor level. Because the Tier I corridor improvements would be constructed over a multi-year time frame, potential cumulative impacts, as well as other resource impacts, could change over time. As projects are programmed as Tier II construction-level projects, they will be subject to separate environmental review, including the consideration of cumulative impacts.

The discussion of the Tier II Auxiliary Lane Alternative is provided at the project level because implementation is expected to occur in the near future.

In a cumulative impacts analysis, the identification of "past, present, and reasonably foreseeable future actions can utilize either the "list approach" or the "projection approach." The list approach identifies specific projects in the vicinity, typically provided by a local planning department. The "projection approach" or adopted plan approach relies on current general plans, transportation plans, or other planning documents, which by definition account for cumulative growth in a defined area.

For this analysis, the "projection" approach was utilized for the assessment of cumulative traffic and air quality impacts. As an example, the Monterey Air Year 2030 Association of Monterey Bay Area Governments Regional Travel Demand Model was used to project future build and no build conditions and is based on planned regional growth, as contained in adopted general plans. The model also accounts for planned growth in adjacent areas. For all other resource areas discussed, the "list approach" is used and takes into consideration those projects in Table 2.5-1.

Cumulative impact analysis was undertaken by following guidance in the Caltrans Standard Environmental Reference and the Federal Highway Administration Interim Guidance: Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process (2003). As specified in the aforementioned guidance, if the proposed project would not result in a direct or indirect impact to a resource, it would not contribute to a cumulative impact on that resource.

2.5.3 Affected Environment

Past, present, and reasonably foreseeable projects considered for this cumulative impact analysis are listed in Table 2.5-1. These include infrastructure projects in or adjacent to the project corridor, as well as private developments within the Tier I Corridor project vicinity. Of the projects listed in Table 2.5-1, the following are active projects located within the Tier II Auxiliary Lane Alternative vicinity and that could have overlapping construction periods with the Tier II Auxiliary Lane Alternative project:

- Nigh Property (5940 Soquel Avenue)
- The Farm Neighborhood Park and Community Center
- Intelligent Transportation System on Route 1

Table 2.5-1: Projects Considered for Cumulative Impacts

Project	Description	Status / Construction Dates
Active and Planned Projects		
St. Stephen's Senior Housing	Development of up of 40 units of affordable housing for seniors, located on vacant lands on the site of St. Stephen's Church off of Soquel Avenue.	Permit application pending.
Hyatt Place Hotel	A development for a 111-room hotel property to be constructed at 407 Broadway, Santa Cruz, CA 95060, approximately 1 mile from Route 1.	Pending permit application.
Erlach Site on Cunnison Lane—MidPen Housing Project	Development of a 102-unit affordable housing project at 3250 – 3420 Cunnison Lane, Soquel, CA 95073, approximately 0.35 mile from Route 1.	Permit approved - project on hold.
Nigh Property, Soquel*	A proposed 100-unit residential development to be constructed at 5940 Soquel Avenue, Soquel, CA 95073, approximately 0.33-mile from Route 1.	Permit application pending.
The Farm Neighborhood Park and Community Center*	A development of a 2-story community center, 39 units of housing, 0.75 mile of meandering pathways, a skate feature, 1/2 basketball court, children's play structures, a bocce ball court, nature interpretive signage, a pedestrian bridge, a dog enclosure, community and heritage gardens, oak woodland habitat restoration, turf and picnic areas, landscaping, a restroom, and parking areas. Located at 3120 Cunnison Lane, Soquel, CA 95073, approximately 0.5 mile from Route 1.	Permit application has been submitted.
Pacific Station	The current conceptual plan is for a 5-story, mixed-use, transit-oriented development with the expanded Metro center on the ground floor, along with limited commercial uses; parking on the second floor; and affordable housing with limited office space on the remaining 3 floors, approximately 1 mile from Route 1.	In planning phase.
Heart of Soquel - Soquel Creek Linear Park and Parking Improvements	A potential development of community facility projects, such as pedestrian and vehicular safety and circulation improvements, environmental enhancement, and facility improvements for potential event hosting activities located at Soquel Drive and Porter Street, Soquel, CA 95073, approximately 0.32 mile from Route 1.	Unknown
Metrobase	A development that would consolidate all of METRO's Operations, Administration, Fueling, Maintenance, and ParaCruz facilities in the Harvey West area of Santa Cruz, to be constructed near the end of State Highway 9, at the intersection of River Street and Route 1.	Under construction
Rio Del Mar Boulevard Improvements	Improvements of roadways and roadsides on Rio del Mar Boulevard from Esplanade to Route 1, which includes the addition of bike lanes, transit turnouts, left-turn pockets, merge lanes, and intersection improvements. Roadwork includes major rehabilitation and maintenance of road and roadsides.	Under construction.

Table 2.5-1: Projects Considered for Cumulative Impacts

Project	Description	Status / Construction Dates
Deploy Intelligent Transportation System on Route 1*	Deployment of Intelligent Transportation System technologies on Route 1, which would include closed-circuit television cameras, vehicle detection devices, and signage.	Under construction.
Route 1 San Lorenzo Bridge Widening	Widen the Route 1 San Lorenzo River Bridge to improve flow from Route 17 through the Junction of 1/9.	Planning phase
Route 1/9 Intersection Improvements	Intersection of Route 1 and Highway 9, City of Santa Cruz	Planning phase
Route 1/Harkins Slough Road Interchange	Route 1 at Harkins Slough Road, City of Watsonville	Planning phase
Bicycle and Pedestrian (Class I)	Construction on Route 1 at Morrissey Boulevard	Under construction
Santa Cruz Branch Line	RTC recently acquired the 31-mile freight rail corridor between Davenport and the Watsonville/Pajaro Junction to be developed into a transit, bike, and pedestrian corridor.	Planning and feasibility studies underway.
Recent, Past Projects		
Canterbury Park – Aptos	A development of 19 new 2-, 3-, and 4-bedroom townhomes located at Canterbury Drive and Sea Ridge Road. The townhomes are priced to be affordable to moderate-income families.	Completed 2013
Aptos Blue	Development of a 40-unit complex for low-income individuals. Located on part of the original Aptos Ranch.	Completed 2013.
350 Ocean Street	A mixed-use project including 82 residential condominiums, 8,900 square feet of retail commercial space, and a 7,500-square foot gymnasium and spa, located at 350 Ocean Street, Santa Cruz, CA 95060, approximately 0.98 mile from Route 1.	Completed 2014.
Highway 1 Soquel/ Morrissey Auxiliary Lanes Project	Construction of auxiliary lanes between the Soquel Avenue–Soquel Drive and Morrissey Boulevard interchanges. Also includes replacement of the Route 1/La Fonda Avenue overcrossing.	Completed 2013.
Silvercrest Apartments Rehabilitation – Capitola	Rehabilitation of the existing structure, which includes 96 units for seniors, located at 750 Bay Avenue.	Completed 2013.
Redwood Commons*	A development of 36 single-room occupancy residential units to be constructed at 1606 Soquel Avenue, Santa Cruz, CA 95062, approximately 0.47 mile from Route 1.	Completed 2012.
Tannery Arts Center	The project, which is located approximately 0.3 mile from Route 1, includes three phases: • The Tannery Artist Lofts, 100 units of affordable housing for artists (completed) • The Digital Media and Creative Arts Center, which	In operation.

Table 2.5-1: Projects Considered for Cumulative Impacts

Project	Description	Status / Construction Dates
	includes the rehabilitation of the historic buildings on the property to be used as studio space for artists (under construction) • The Performing Arts Center (fundraising stage)	
National Marine Fisheries Visitor Center	The visitor center provides the Marine Sanctuary Program and the State of California with a marine education facility just steps from the Pacific Ocean, approximately 1 mile from Route 1.	In operation. Completed 2012.

Source: Santa Cruz County Redevelopment Agency, September 2011; City of Santa Cruz Planning and Community Development Department, February 2008, March 2011, March 2013, August 2014. City of Santa Cruz Economic Development Department, March 2013, August 2014.

* Project located within the Tier II Study Area.

The following sources were consulted to identify all projects to be considered in cumulative impact analysis:

- Governor's Office of Planning and Research Office database of environmental documents, *available at* http://www.ceqanet.ca.gov/
- Caltrans District 5, Project Information page, *available at* http://www.dot.ca.gov/dist05/projects/#scr
- 2010 Santa Cruz County Regional Transportation Plan, *available at* http://sccrtc.org/funding-planning/long-range-plans/past-rtps/
- RTC's Web site, *available at* http://www.sccrtc.org
- The City of Santa Cruz Web site, Planning and Community Development page, *available at* http://www.ci.santa-cruz.ca.us/pl
- The City of Santa Cruz Web site, Economic Development Department page, *available at* http://www.cityofsantacruz.com/index.aspx?page=452
- Santa Cruz County Redevelopment Agency Web site, *available at* http://sccounty01.co.santa-cruz.ca.us/red/currentprojects.html
- Santa Cruz County Department of Public Works Web site, *available at* http://www.dpw.co.santa-cruz.ca.us/roaddesign.htm
- City of Santa Cruz, Department of Public Works Web site, *available at* http://www.cityofsantacruz.com/index.aspx?page=96
- Santa Cruz Metropolitan Transit District Web site, *available at* http://www.scmtd.com/

2.5.4 Environmental Consequences

The following environmental resource areas would not be substantially affected by the proposed Tier I and II projects; therefore, they would not be subject to cumulative impacts based on consideration of the nature of the proposed project, the project setting, the impact

analysis findings presented in Chapter 2, and the characteristics of other past, present, and reasonably foreseeable projects within the project vicinity. These environmental areas include:

- Land Use – As discussed in Section 2.1.1, the Tier I and Tier II projects would result in conversion of some commercial and residential property to transportation use due to sliver right-of-way acquisitions from commercial properties paralleling the highway and highway interchanges. In the case of the Tier I Corridor HOV Lane Alternative, there would be approximately 12 business displacements and eight residential displacements. This land use conversion represents a relatively minor change in land use relative to the entire area and would not alter land use patterns and would not occur in an area with a shortage of commercial or residential property. In consideration of other past, present, and foreseeable projects, this land use conversion impact remains unsubstantial and would not contribute to cumulatively considerable land use impacts.
- Growth – As discussed in Section 2.1.2, the Tier I Corridor Alternatives, encompassing the Tier II Auxiliary Lane Alternative, would not stimulate unplanned residential or commercial growth. Project-related growth is not reasonably foreseeable for the Route 1 corridor, and cumulative growth impacts would not result from project implementation.
- Utilities/Emergency Services – As discussed in Section 2.1.4, construction of the Tier I and Tier II projects would involve utility relocations; however, these would be handled through standard practice that minimizes service disruptions. Operation of the Tier I and Tier II projects would not affect utility demand and service. Emergency services would benefit from operation of both the Tier I and Tier II projects. The Tier I and Tier II projects would not contribute to cumulatively considerable impacts.
- Energy – As discussed in Section 2.2.8, the Tier I and Tier II projects would have a neutral or beneficial effect on energy consumption that would not be cumulatively considerable.
- Cultural Resources –The Tier I and Tier II Corridor Alternatives would not adversely affect historic resources within the architectural Area of Potential Effects, and implementation of mitigation measures presented in Section 2.1.7 would avoid or minimize potential impacts to unevaluated archaeological sites; therefore, the project would not result in substantial impacts that would be cumulatively considerable.
- Geology/Soils/Seismic/Topography – The proposed Tier I and Tier II projects are located in a seismically active area of California with the potential for strong ground shaking during a major earthquake. Like all active and planned projects, the proposed Tier I and Tier II projects would be designed to meet current seismic safety standards, allowing them to withstand the maximum credible earthquake; therefore, there would be no cumulative impacts related to geologic or seismicity. .

- Hazardous Materials – The Recognized Environmental Conditions identified in Section 2.2.5 would involve localized impacts that would be avoided or mitigated under the proposed Tier II Auxiliary Lane Alternative and future projects under the Tier I Corridor Alternatives. No cumulative impacts due to the release of hazardous materials or other environmental risks are anticipated.
- Air Quality – The Tier I and Tier II corridor projects would result in a beneficial effect for most criteria pollutants, and small increases in several criteria pollutants; however, these are not considered substantial. The project would not result in cumulatively considerable impacts to regional emissions.

The environmental resource areas discussed in the following subsections could have the potential to cause cumulative impacts based on consideration of the nature of the proposed project, the project setting, and the impact analysis findings presented in Chapter 2. The characteristics of other past, present, and reasonably foreseeable projects within the project vicinity are considered, as presented below.

Paleontology

For paleontology, the Resource Study Area encompasses the project footprint within the project limits. The proposed Tier I and Tier II projects are located in areas where there is high potential for paleontological resources. If the project were to encounter paleontological resources during construction, the potential cumulative effect could be high, particularly because many past construction projects in the area have not included mitigation for impacts to paleontological resources. However, with the mitigation described in Section 2.4.8, the impacts would be reduced and would not add to the cumulative effect of the proposed Tier II Auxiliary Lane Alternative and future construction projects. Because of the mitigation measures proposed for this project, there would be no substantial cumulatively considerable impacts to paleontological resources.

Hydrology and Floodplain

Portions of the Tier I and Tier II project footprints are located within the 100-year floodplain. The Resource Study Area is defined as those project locations within the floodplain. Mitigation conceptually identified for the Tier I Corridor Alternatives, and required mitigation measures identified for the Tier II Auxiliary Lane Alternative would result in a negligible increased risk associated with the probability of flooding attributable to an encroachment for the Tier II Auxiliary Lane Alternative and for the Tier I Corridor Alternatives.

The Tier I Corridor Alternatives would not pose a substantial risk by increasing impervious surface area in the Highway 1 corridor. The increase in roadway runoff would be minimal under each alternative in comparison to the overall watersheds (i.e., less than 0.89 percent) at

each crossing; therefore, there would be a minor change in the water surface elevation to the five identified floodplain areas due to the widening proposed for both of the Tier I Corridor Alternatives. Floodplain effects due to past, active, and planned projects in combination with the proposed Tier I and Tier II Corridor Alternatives would not result in cumulatively considerable impacts to floodplains and hydrology.

Water Quality and Storm Runoff

The Resource Study Area for water quality is defined as the wastersheds located within the project area. The proposed Tier I Corridor Alternatives and the Tier II Auxiliary Lane Alternative would increase impervious areas; therefore, they would potentially increase the volume and velocity of stormwater flow to downstream receiving water bodies. Pollutant loading can also be increased with increased impervious area and velocity of storm flows.

At present, there are no existing treatment Best Management Practices along Highway 1 within the Tier I project limits to treat roadway runoff; the Tier I and Tier II Corridor Alternatives would incorporate treatment Best Management Practices and would be designed to maintain preconstruction stormwater discharge flows, which would avoid substantial, adverse effects on water quality. The adjacent Highway 1 – Soquel/Morrissey Auxiliary Lanes Project, completed December 2013, includes the measures described above. Therefore, implementation of the Highway 1 Soquel/ Morrissey Auxiliary Lanes Project in concert with the Tier II Auxiliary Lane Alternative and subsequent Tier II projects would cumulatively benefit water quality and storm runoff in watersheds traversed by Highway 1.

Traffic

For traffic, the Resource Study Area was defined as the area within the project limits, as well as the surrounding area where the project would result in measurable changes in traffic patterns. Thus, the Resource Study Area includes the freeway segments, arterial streets, and intersections identified in Section 2.1.5, Figure 2.1.5-2.

Past development has resulted in increased traffic on Route 1 and in the project area as a whole, and although anticipated development is projected to be moderate, future increases in traffic are projected to occur. Traffic forecasts that were prepared for year 2035 for this project take into account traffic from future developments that were included in the approved general plans for the cities of Santa Cruz and Capitola, and for Santa Cruz County. The forecasts also account for planned growth within Association of Monterey Bay Area Governments planning boundaries and include planned improvements to the transportation network.

As described in Section 2.1.5, the facilities to be constructed by selection of the Tier I and Tier II build alternatives would improve traffic operations and improve travel times.

Implementation of the Tier I and Tier II build projects would not result in an adverse cumulative traffic impact because the project's overall traffic effect would be beneficial.

Biology

For biological resources, the Resource Study Area encompasses the project footprint and those adjacent lands where an indirect effect could occur. Historically, development in the Santa Cruz area has resulted in a substantial loss of valuable ecological habitats, including: wetlands, oak woodlands, riparian, and aquatic habitat. The loss of these and other habitats has directly affected many plant and animal species, resulting in direct threats to the continued existence of many species.

All of these factors led to the enactment of various statutes, regulations, and policies whose goals are to halt, and in many cases reverse, this trend. These include the Federal Endangered Species Act, the California Endangered Species Act, the Clean Water Act, the Porter-Cologne Water Quality Control Act, the National Environmental Policy Act, and the California Environmental Quality Act. These statutes require private and public projects to include measures that avoid and/or fully mitigate for impacts to sensitive habitats and the special-status species that are found within them.

In the case of the proposed Tier I and Tier II build alternatives, although they would result in impacts to various habitats and special-status animal species, any contribution to cumulative impacts is anticipated to be minimal because impacts to these resources will be addressed by the mitigation, minimization, and avoidance measures identified in Section 2.3, Biological Environment. Specifically, all loss of sensitive habitats and impact to special-status species resulting from the proposed highway improvements would be fully mitigated by the creation of replacement habitats and measures to protect subject species.

Noise

For noise, the Resource Study Area was defined as the project corridor and immediately adjacent land uses. As discussed in Section 2.2.7, the primary source of noise in the project area is traffic on Route 1.The roadway widening that would occur under the Tier I and Tier II build alternatives would result in increased noise levels at some locations adjacent to Route 1 due to moving vehicular traffic closer to residences and businesses. Table 2.5-1 includes foreseeable projects, given that the closest project is located 0.3 mile from the project corridor, a cumulative noise impact associated with the Tier I and Tier II build alternatives is not anticipated. As previously discussed, future Tier II projects will undergo separate environmental review, including consideration on noise impacts

Visual Resources

For visual impacts, the Resource Study Area is the entire project corridor and the project limits of the adjoining Highway 1 Soquel/Morrissey Auxiliary Lanes Project to the west. Key

viewpoints were chosen to help evaluate the project's visual impact as experienced by viewers at various locations in the vicinity of Route 1. These viewpoints are representative of the visual environment experienced by a cross section of drivers and residents viewing the roadway adjacent from the project. As discussed in Section 2.1.6, changes to the visual setting due to the proposed project would occur.

Both of the Tier I Corridor Alternatives have the potential to result in substantial impacts to the Route 1 Corridor, due to the loss of vegetation, removal of mature trees, and the addition of walls and other hardscape elements. Those past, present, and other foreseeable projects, in combination with the proposed Tier I Corridor Alternatives, could eventually affect the official Scenic Highway designation for the portion of Route 1 within the resource study area, as well as the scenic character of the immediate area. The aforementioned visual changes that would occur if either of the Tier I build alternatives were fully implemented would introduce features that, although not currently present within the project corridor, in combination with the visual changes that occurred from the Highway 1 Soquel/Morrissey Auxiliary Lanes Project, would result in a cumulative impact characteristic of other highways. The Tier II Auxiliary Lane Alternative would introduce substantial visual changes to a portion of the corridor as an individual project, thereby contributing to the cumulative visual impact on the Route 1 corridor.

No Build Alternative

The No Build Alternative assumes that, other than the improvements currently planned, programmed improvements, and continued routine maintenance (described in Section 1.4.4), no major construction would take place on Route 1 through the project limits. These projects would be subject to individual environmental review, and cumulative impacts would be analyzed, as necessary; therefore, the No Build Alternative would not result cumulative impacts for any of the environmental resource areas discussed above.

2.5.5 Avoidance, Minimization and Mitigation Measures

Tier I Corridor Alternatives

The build alternatives would result in cumulative impacts to visual resources and aesthetics within the project area. Because implementation of either of the Tier I corridor alternatives would occur over a period of years, the avoidance, minimization, and/or mitigation measures outlined in Chapter 2 are conceptual, based on existing conditions and current regulatory practices. These measures are intended to address the impacts of vegetation removal and the introduction of new hardscape elements. As portions of the corridor are programmed, they will become Tier II projects, each subject to separate environmental review, including the consideration of cumulative impacts. Future project level documents will revisit this issue taking into account past, present, and reasonably foreseeable projects in an updated analysis.

As cumulative impacts are identified, the project can also pursue opportunities to coordinate avoidance, minimization, and mitigation measures with other project proponents whose undertakings contribute to the identified cumulative impacts.

Tier II Auxiliary Lane Alternative

The Tier II Auxiliary Lane Alternative would contribute to a cumulative impact on visual resources within the project area. Project level measures to avoid, minimize, and/or mitigate visual impacts are identified in Section 2.1.6 of this document to address the loss of vegetation and the introduction of hardscape elements within the Tier II project area. The implementation of these measures would avoid, minimize, and/or mitigate the project's contribution to a cumulative impact on visual resources within the project area.

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