4 CUMULATIVE IMPACTS

4.1 APPROACH TO THE CUMULATIVE EFFECTS ANALYSIS

The California Environmental Quality Act Guidelines (State CEQA Guidelines) Section 15130 requires that an environmental impact report (EIR) discuss the cumulative impacts of a project. As defined in Section 15355, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts."

CEQA provides for an evaluation of the significance of a project's cumulative impact based on whether the project's incremental effect is "cumulatively considerable." The definition of "cumulatively considerable" is provided in Section 15065(a)(3):

> "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

State CEQA Guidelines Section 15130(b) provides two possible approaches for establishing the cumulative environment in which the project is to be considered:

- A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside of the control of the agency (the "list approach").
- A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing (the "plan approach").

This cumulative analysis considers both the list and plan approach. As discussed in more detail below, cumulative projects considered within the LRDP area include development proposals relying on the 2005 LRDP. Cumulative projects considered outside of the LRDP area include those projects located in the City of Santa Cruz and County of Santa Cruz, and California Department of Transportation proximate to the campus.

4.2 SCOPE OF THE CUMULATIVE ANALYSIS

The geographic area that could be affected by 2021 LRDP development in combination with cumulative projects varies depending on the type of environmental resource being considered. The general geographic area associated with various environmental effects of 2021 LRDP construction and operation defines the boundaries of the area used for compiling the list of projects considered in the cumulative impact analysis. Table 4-1 identifies the general geographic areas associated with the different resources addressed in this Draft EIR and evaluated in those sections of this cumulative analysis. The term "local" as used here, generally includes the area within 2 miles of the 2021 LRDP.

Table 4-1 Geographic Scope of Cumulative Impacts

Resource Issue	Geographic Area
Aesthetics	Local (LRDP area and surrounding public viewpoints)
Agriculture and Forestry Resources	Regional (Santa Cruz County)
Air Quality	Regional (North Central Coast Air Basin for pollutant emissions that have regional effects) Local (immediate vicinity for pollutant emissions that are highly localized such as Carbon Monoxide)
Archaeological, Historical, and Tribal Cultural Resources	Local (LRDP area)
Biological Resources	Regional (Santa Cruz County) and local (LRDP area and immediately surrounding area)
Energy	Regional (Pacific Gas and Electric Company grid in Santa Cruz County)

Resource Issue	Geographic Area
Geology and Soils	Local (LRDP area)
Greenhouse Gas Emissions and Climate Change	Global
Hazards and Hazardous Materials	Local (LRDP area)
Hydrology and Water Quality	Regional (Santa Cruz County) and local (LRDP area)
Land Use and Planning	Local (LRDP area and immediately surrounding area)
Noise	Local (immediate project vicinity where project-generated noise could be heard concurrently with noise from other sources)
Population and Housing	Regional (Santa Cruz County) and local (LRDP area and immediately surrounding area)
Public Services	Local service areas of service providers
Recreation	Regional (Santa Cruz County) and local (LRDP area)
Transportation	Regional (Santa Cruz County) and local (LRDP area and immediately surrounding area)
Utilities and Service Systems	Local service areas of utility providers
Wildfire	Regional (Santa Cruz County) and local (LRDP area and immediately surrounding area)

As noted in Table 4-1, the potential geographic scope of some cumulative effects is more localized than others. To account for both regional and localized cumulative impacts, this EIR uses regional growth projections to assess cumulative impacts that would occur on a regional level, and uses a list of projects to assess more localized cumulative impacts.

4.2.1 Timeframe

The timeframe of past, present, and probable future activities was determined as follows:

- **Past/Completed Projects**. Past/Completed projects include those that have been approved and constructed in the past two years prior to February 25, 2020 (the time that the EIR's NOP was published). The influence of past activities is reflected in the baseline, which, pursuant to CEQA, reflects "existing conditions" at the time of the NOP [State CEQA Guidelines Section 15125[a]].
- **Present Projects**. Projects that are either under construction/being implemented, have been approved for construction and operation/implementation, or are ongoing as of February 25, 2020.
- **Reasonably Foreseeable, Probable Future Projects**. Reasonably foreseeable future projects include a summary of reasonably foreseeable activities from planning documents and other projects which, by their nature, would have impacts that could combine with those from the project to create cumulative effects.

4.2.2 Cumulative Projects Considered

As noted above, the State CEQA Guidelines identify two basic methods for establishing the cumulative environment in which the project is to be considered: the use of a list of past, present, and probable future projects (the "list approach") or the use of adopted projections from a general plan, other regional planning document, or certified EIR for such a planning document (the "plan approach"). This analysis utilizes both the list and plan approach, using whichever is more appropriate to accurately evaluate potential cumulative impacts for a particular resource. Relevant projects and planning efforts are discussed in more detail below.

LIST OF PROJECTS WITHIN AND OUTSIDE OF THE LRDP AREA

The past, present, and foreseeable development projects in the vicinity of the LRDP area are listed in Table 4-2 and shown in Figure 4-1. This list is not intended to be an all-inclusive list of projects in the region, but rather an identification of projects constructed, approved, or under review within approximately 2 miles of the LRDP area that have some relation to the environmental impacts of construction and operation of potential uses associated with implementation of the 2021 LRDP. Using a 2-mile radius is appropriate for characterizing potential cumulative impacts within a local context (e.g., with respect to aesthetics, noise, localized air quality, etc.) as these types of impacts are typically localized within less than 2 miles (e.g., siting new sensitive land uses within 500-1,000 feet of existing high-traffic corridors or industrial uses may indicate a potential for localized air quality impacts.) The list of projects used in this cumulative analysis is based on information for approved and pending projects obtained from the City of Santa Cruz (City), Santa Cruz County (County), and the California Department of Transportation (Caltrans). Of note, no County projects were identified within 2 miles of the LRDP area. In addition, approved and pending UC Santa Cruz projects that are considered part of the previous (2005) LRDP are listed in Table 4-2.

Table 4-2 List of Past, Present, and Reasonably Foreseeable Projects in the Vicinity of the LRDP Area

Map Key	Project Name	Land Use	Description	Status
	UC Santa Cruz			
A	Student Housing West[1]	Colleges & Student Housing	Student housing development along Hagar and Heller Drives. Would provide 3,072 beds (a net increase of 1,972 beds) for students on campus.	Planned but not Operational
B	Kresge Housing	Colleges & Student Housing	Redevelopment of existing Kresge College student housing. Would provide 552 beds (a net increase of 187 beds) for students on campus.	Planned but not Operational
C	Environmental Health and Safety (EH&S) Facility	Facilities & Operations	An approximately 7,100 gross square foot EH&S building located on Heller Drive within the central campus.	Completed
D	Crown College Major Maintenance Project	Colleges & Student Housing	Renovation of existing development along Chinquapin Road within the central campus. Provides 16 net new undergraduate student beds.	Completed
E	Rachel Carson Dining Hall Expansion	Colleges & Student Housing	Renovation and expansion of an existing dining hall located along Heller Drive within the west campus. Would provide approximately 2,789 square feet of dining space and 77 new seats.	Anticipated to be completed by 2022.
F	Porter Dining Seating Expansion	Colleges & Student Housing	Expansion of existing dining hall located along Heller Drive within the west campus. Would provide approximately 1,700 square feet of outdoor dining space.	Under construction. Anticipated to be substantially completed by November 2020.
G	Ranch View Terrace Phase 2	Employee Housing	Employee housing development along Ranch View Road within the south campus. Would provide 39 single family homes.	Anticipated to be completed by 2023.

Map Key	Project Name	Land Use	Description	Status
	City of Santa Cruz			
1	160 Jewell	Memory care facility	48-unit memory care facility	Completed
2	1804–1812 Ocean Street (101 Jewell Street)	Residential	11 townhouse units	Completed
3	555 Pacific	Residential and commercial	94 small ownership units/5,000 square feet of commercial space	Completed
4	120 Toledo	Residential	Duplex	Completed
5	225 Meder Street (100–106 Lars Road)	Residential	Four townhouse units	Completed
6	2956 Mission	Hotel	82-room hotel (Fairfield Inn)	Completed
7	2656 Mission	Industrial	11,611-square-foot industrial/warehouse building	Completed
8	630 Water	Hotel	Add 20 single-room occupancy units to existing mixed-use development	Completed
9	413 Laurel	Residential and commercial	Convert office building to two residential units and one commercial space	Completed
10	708–720 Water	Multifamily residential (apartments)	Demolish commercial buildings and residences and construct a 41-unit apartment complex	Completed
11	230 Grandview	Multifamily residential (apartments)	Demolish single-family dwelling and construct 12 apartment units	Completed
12	912 Western Drive	Land division	Three-lot minor land division	Under construction
13	313-321-325 Riverside Avenue (Courtyard Marriott)	Hotel	151-room hotel with meeting room, pool, exercise room; replace three existing motels (64 rooms and manager unit) for net increase in 87 rooms	Under construction
14	301 Beach	Hotel expansion	Add five rooms to an existing hotel	Under construction
15	1547 Pacific (Park Pacific)	Residential and commercial	79 residential units and 5,750 square feet of commercial space	Under construction
16	148 Sunnyside	Residential	Construct two units (demolish single-family dwelling)	Under construction
17	515 Fair	Land division and various types of residential	Lot split, three condominiums, single-family home, and accessory dwelling unit on historic site	Under construction
18	2424 Mission	Hotel	Demolish 32-room hotel and construct 60-room hotel	Under construction
19	530 S. Branciforte	Multifamily residential (condominiums)	Four condominium units	Under construction
20	300 Panetta	Residential and commercial	Mixed-use building: three residential units and 23,195 square feet of commercial space (2120 Delaware Phase 1B)	Under construction
21	769 N. Branciforte	Residential	Three townhouse units	Under construction
22	135 Dubois	Storage facility	Self-storage facility	Under construction
23	550 Second	Hotel	60-room hotel	Under construction
24	200 High Road	Residential and commercial	14,100-square-foot mixed-use building: 11,100 square feet of commercial space and two flex residential units (2120 Delaware Phase 1B)	Under construction

Map Key	Project Name	Land Use	Description	Status
25	350 Ocean	Multifamily residential (apartments) and commercial	63 apartments (with demolition of 20 existing apartments and two single-family homes) and 6,800 square feet of retail	Under construction
26	214 Plymouth	Land division and residential	Lot split and construction of a duplex on each new lot.	Under Construction
27	116 Gharkey	Land division and residential	Lot split with single-family home and accessory dwelling unit on each lot	Under Construction
28	335 Golf Club	Residential	10-unit housing for developmentally disabled	Under Construction
29	215 Beach	Hotel	165-room hotel (La Bahia)	Under Construction
30	1619 Delaware	Land division	Lot split	Under construction
31	189 Beach	Hotel expansion	Add 12 hotel rooms to Casablanca Inn	Under construction
32	1201 Fair	Industrial	10,000-square-foot industrial building for ice cream manufacturing	Under construction
33	430 S. Branciforte	Land division	Lot split	Approved
34	716 Monterey	Land division	Lot split	Approved
35	1013 Pacific	Multifamily residential (condominiums) and commercial	17 condominium units, 4,300 square feet of commercial space	Approved
36	232 River	Multifamily residential (condominiums)	12 condominium units	Approved
37	801 River	Residential	Convert two-story office building to triplex	Approved
38	2120 Delaware	Residential and commercial	Phase 2: Mixed-use development of 161 units and 10,600 square feet of commercial space	Approved
39	1016 West Cliff	Land division	Lot split	Approved
40	1642 Mission	Land division	Lot split	Approved
41	1024 Soquel Avenue	Multifamily residential (apartments) and commercial	13 apartment units, 1,600 square feet of commercial space	Approved
42	1459 High	Land division	Lot split	Approved
43	501 Cedar	Residential and commercial	Mixed-use building: 769 square feet of commercial space addition and building remodel, resulting in 2,885 square feet of commercial space and two new residential units	Approved
44	1930 Ocean Street Extension	Multifamily residential (condominiums)	32 condominium units	Approved
45	501 Golf Club	Not provided	Construct five buildings and parking lot for Homeless Garden Project	Approved
46	301 Beach	Commercial	Convert four hotel rooms to 1,033 square feet of retail space	Approved
47	1129 Soquel Avenue	Mixed-use residential	Construct 5,420 square feet of mixed-use building with two apartment units	Approved
48	2801 Mission	Industrial	460-square-foot addition to industrial building	Approved

Map Key	Project Name	Land Use	Description	Status
49	100 Laurel	Residential and commercial	Six-story mixed-use building with 205 residential apartments and 7,085 square feet of commercial space	Approved
50	2801 Mission	Commercial	New 975-square-foot entry in a commercial building	Approved
51	112 California Street	Water treatment facility	9,600-square-foot tertiary water treatment facility	Approved
52	217 Encinal	Industrial	New 2,000-square-foot metal fabrication building	Approved
53	190 West Cliff	Multifamily residential (condominiums) and commercial	Four-story mixed-use building: 16,188 square feet of commercial space and 89 residential condominium units	Approved
54	801 River	Multifamily residential (apartments)	Convert office building to seven-unit apartment complex	Approved
55	600 Encinal	Land division	Minor land division: one parcel to three	Approved
56	415 Windsor	Residential	Demolish single-family home and build three townhouse units	Approved
57	111 Errett	Multifamily residential (condominiums)	Demolish church and 12-lot subdivision or 10-lot subdivision with six condominiums	Approved
58	122 Benito	Residential and commercial	Mixed-use building: 2,540 square feet of new commercial space and two dwellings	Approved
59	202 Panetta	Multifamily residential (condominiums)	19,800-square-foot building with 14 commercial condominiums	Approved
60	448 May	Multifamily residential (apartments)	Four residential apartments (demolish one dwelling)	Approved
61	No address, APN 001-172-14	Warehouse	Two warehouse buildings, 18,600 square feet total	Approved
62	515 Soquel Avenue	Residential (hotel and duplexes)	Demolish commercial building and construct 51 single-room occupancy units and two duplexes	Pending application
63	902 Third	Multifamily residential (apartments)	Convert hotel to apartments	Pending application
64	508 Front	Residential and commercial	Mixed-use building: 145 dwelling units and 11,511 square feet of commercial space	Pending application
65	135 Campbell	Multifamily residential (apartments)	Demolish garage and construct two apartment units	Pending application
66	2035 N. Pacific	Residential and office	Mixed-use building: 4,300 square feet of office space and 26 apartment dwelling units	Pending application
67	742 N. Branciforte Ave	Residential	Demolish a second unit and construct a duplex	Pending application
68	418 Pennsylvania	Multifamily residential (apartments)	Add three apartment dwelling units	Pending application
69	417 Cedar	Commercial	351-square-foot addition to commercial building	Pending application
70	217 Potrero	Multifamily residential (condominiums)	Add three residential condominiums to site with existing dwelling	Pending application

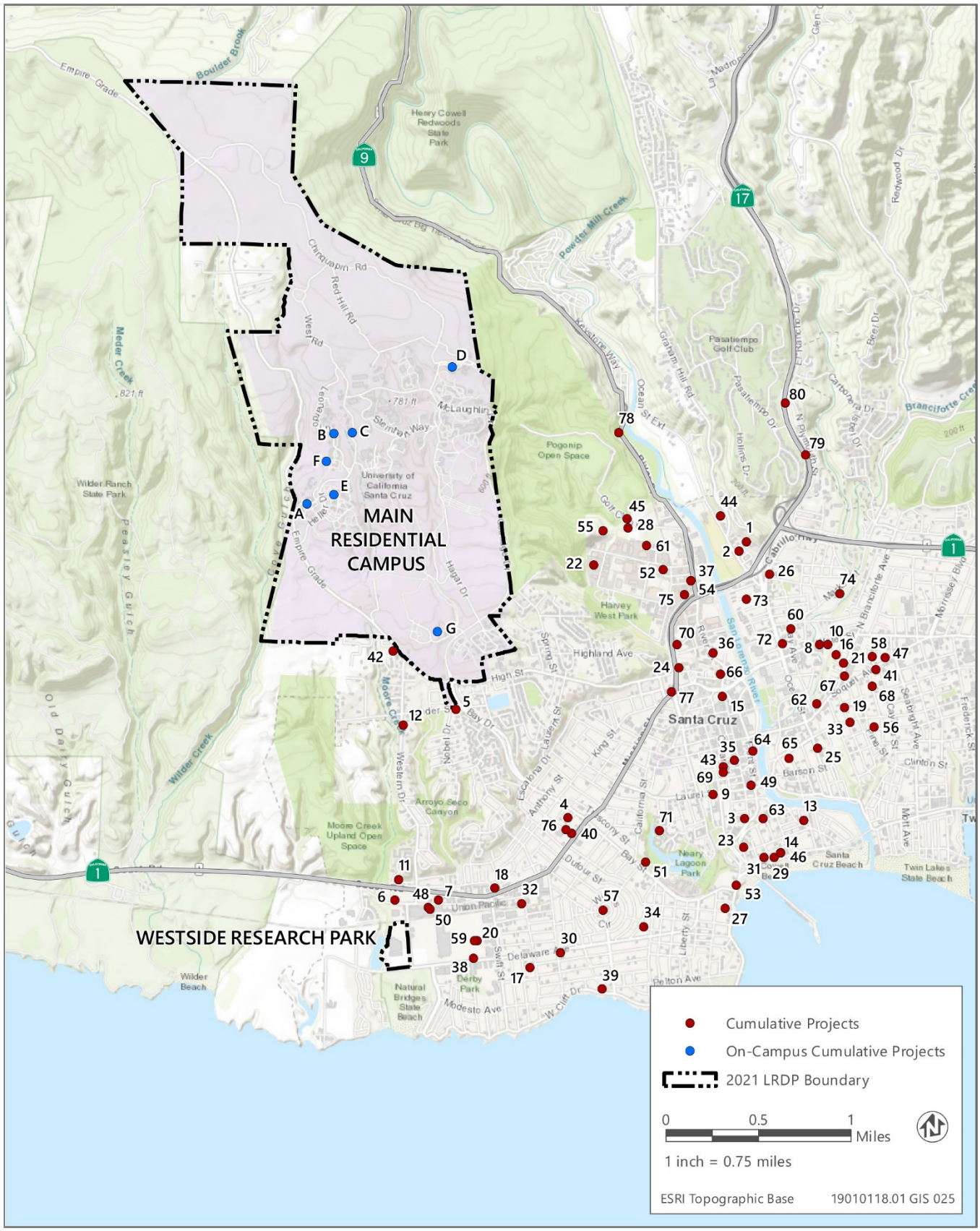
Map Key	Project Name	Land Use	Description	Status
71	101 Felix	Multifamily residential (apartments)	Add 100 apartment dwellings to site with 240 existing dwellings	Pending application
72	908 Ocean	Residential and commercial	408 small ownership units, 7,430 square feet of commercial (demolish 15 dwellings and commercial space)	Pending application
73	137 Pryce	Residential	Three new units	Pending application
74	352 Market	Multifamily residential (apartments)	Seven residential apartments (demolish one dwelling)	Pending application
75	119 Coral	Residential	120 residential supportive housing units (demolish six transitional housing units)	Pending application
76	No address, APN 002-235-26	Multifamily residential (apartments)	Three residential apartments	Pending application
	California Department of Transportation			
77	Santa Cruz Downtown CAP-M (State Route 1)	Transportation	Pave 8.293 LM of Class 2 pavement. Other work will include replacement of 87 Americans with Disabilities Act (ADA) ramps, replacement of Class II bike lanes, and sign panel replacement as needed. 2.7 miles	Approved
78	PM 1.0 and 4.0 Viaduct (State Route 9)	Transportation	In Santa Cruz County near Santa Cruz, 0.5 mile north of Vernon Street, construct side-hill viaduct, restore roadway and facilities; place water pollution control best management practices, erosion control, and required mitigation; and provide temporary traffic control. 0.1 mile	Approved
79	Pasatiempo Shoulder Widening (State Route 17)	Transportation	In Santa Cruz from 0.5 to 0.3 mile south of Pasatiempo overcrossing, shoulder widening and soil nail wall. 0.3 mile	Approved
80	Pasatiempo II (State Routes 1 and 9)	Transportation	In Santa Cruz County in Santa Cruz from 0.1 mile south of State Route 1/17, separation to 0.4 mile south of Pasatiempo overcrossing. Construct ramp safety improvements. 0.2 mile	Approved

[1] The Student Housing West project was approved by the Regents in 2019; however, project implementation was delayed due to a legal challenge to the EIR. The Superior Court upheld the adequacy of the EIR but overturned the approval based on issues with the Regents' findings. It is anticipated that the Regents will consider re-approval of the Student Housing West project prior to certification of the 2021 LRDP EIR.

Source: Compiled by Ascent Environmental in 2020 based on data obtained from UC Santa Cruz, the City of Santa Cruz, Santa Cruz County, and Caltrans.

PLANNING DOCUMENTS OUTSIDE OF THE LRDP AREA

Land use development needed to provide for housing, employment, and other needs of a growing population is primarily guided by general plans and specific plans adopted by city and county governments. The general plan is a comprehensive, long-term, and general document that describes plans for the physical development of a city or county. Local governments are responsible for local land use decisions and planning, including permitting structures to be built within their jurisdictional boundaries. This cumulative analysis considers development projections identified in previously approved planning documents including the City of Santa Cruz 2030 General Plan, County of Santa Cruz General Plan, and Association of Monterey Bay Area Governments 2040 Metropolitan Transportation Plan and Sustainable Communities Strategy.



Source: Figure produced by Ascent Environmental in 2020

Figure 4-1 Cumulative Project Locations

4.3 CUMULATIVE IMPACT ANALYSIS

The following sections contain a discussion of cumulative effects and the contribution of the 2021 LRDP to such effects, taking into consideration related past, present, and reasonably foreseeable future activities, projects, and plans. The analysis conforms with Section 15130(b) of the State CEQA Guidelines, which specifies that the "discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact." When considered in relation to other reasonably foreseeable projects, cumulative impacts to some resources would be significant and more severe than those caused by the proposed project alone.

For purposes of this EIR, the incremental effect of the project would be cumulatively considerable if the cumulative effect of related activities when considered in combination with the effect of the proposed project is significant, and the incremental contribution of the project to these effects is substantial enough to be considered cumulatively considerable.

Such an outcome can occur in one of two ways. First, the cumulative effect of related activities (past, current, and probable future activities) without the project is not significant, but the incremental effect of the project, when added to the cumulative effect of the related projects, is substantial enough to result in a new cumulatively significant impact. Or second, the cumulative effect of related activities (past, current, and probable future activities) is already significant and the addition of the effect of the project is substantial enough to make the project's contribution cumulatively considerable and thus significant in and of itself.

This cumulative analysis employs a multi-step approach: (i) assess whether the project, together with past, present, and probable future projects, will cause significant cumulative impacts, (ii) identify the project's contribution, without mitigation, to existing/anticipated (without the project) cumulative effects, (iii) determine whether, even with mitigation, the project's incremental contribution would be cumulatively considerable, (iv) if the answer is yes, to identify any additional potentially feasible mitigation that may be available, and (v) to identify the impact significance conclusion after implementation of all (project-specific and any additional) potentially feasible mitigation.

4.3.1 Aesthetics

The geographic scope of the aesthetics cumulative impact analysis is local and includes the LRDP area and surrounding areas with public views of the LRDP area.

Development of past, current, and future projects continue to alter the visual environment of the LRDP area and the surrounding areas. With few exceptions, the visual resource impacts of the related projects listed in Table 4-2 above are site-specific and would not necessarily combine with other projects, including the 2021 LRDP, because they are not in the same viewshed. Urban development as guided by city and county general plans (i.e., City of Santa Cruz and County of Santa Cruz) could result in significant cumulative impacts to aesthetics when combined with implementation of the 2021 LRDP. Surrounding areas with public views of the LRDP area that are designated for urban development under the city and county general plans include the area directly to the north and south of the main residential campus which is designated for community facilities, natural areas, and low- to medium-density residential development, and the area to the east of Westside Research Park which is designated for industrial development. Consequently, development guided by city and county general plans and the 2005 LRDP combined with 2021 LRDP implementation could result in a significant cumulative aesthetics impact.

As noted in Section 3.1, "Aesthetics," UC Santa Cruz values views across the campus meadows to its wooded backdrop on central and north campus as viewed from Empire Grade Road. UC Santa Cruz also values views within campus facing east and south towards the coast and Monterey Bay and the visual quality of the Cowell Lime Works Historic District. Construction of the Student Housing West project, which is a planned but not yet operational project under the 2005 LRDP, combined with development under the 2021 LRDP could result in a significant cumulative aesthetics and visual resources impact. The Student Housing West project would include student housing on two distinct sites located on Heller Drive (Heller Site) and the intersection of Glenn Coolidge Drive and Hagar Drive (Hagar Site).

Two visual simulations were prepared to assess the potential cumulative impacts of the Student Housing West and Kresge Housing projects under the 2005 LRDP, as listed in Table 4-2, in combination with the 2021 LRDP. Figure 4-2 identifies the locations of the two additional viewpoints used for this analysis.

Cumulative Viewpoint 1: As shown in Figure 4-3 (Cumulative View 1 – View from Empire Grade), Cumulative Viewpoint 1 offers views of the UC Santa Cruz campus setting from the western edge of the main residential campus, along Empire Grade near the west entrance. From this vantage point, views are largely dominated by open meadow, scattered vegetation, and a few mature trees. In the background, Oakes and Rachel Carson College can be seen. Sensitive viewing groups largely include UC Santa Cruz students, faculty, and staff, but could also include nearby residents or tourists visiting the campus, and passersby traveling on Empire Grade Road. The Heller Site would be redeveloped to provide student housing, parking, and support spaces. As shown in Figure 4-3, new structures on the Heller Site associated with Student Housing West, a cumulative project, would be visible in the foreground and would substantially change the existing view, resulting in a significant impact on this view. With respect to the 2021 LRDP, development under the 2021 LRDP would also be visible from this viewpoint on Empire Grade; however, as discussed in Section 3.1, "Aesthetics," envisioned college and student housing buildings would be clustered together and visually consistent with existing uses in the area. Further, as the visual simulation shows, new structures would be situated within the hillside and would not substantially alter scenic views of the grasslands located along Empire Grade looking east. As a result, the 2021 LRDP's contribution to impacts on scenic vistas along Empire Grade would not be cumulatively considerable.

Cumulative Viewpoint 2: As shown in Figure 4-4 (Cumulative View 2 - View from Glen Coolidge Drive), Cumulative Viewpoint 2 offers views of the UC Santa Cruz campus setting from the Glen Coolidge Drive looking north. From this vantage point, views are largely dominated by open meadow, scattered vegetation, and a few mature trees in the distance. Sensitive viewing groups largely include UC Santa Cruz students, faculty, and staff, but could also include nearby residents or tourists visiting the campus. As part of Student Housing West, which is a cumulative project, the Hagar Site would also be developed with housing, a childcare facility, and parking, and support spaces. As shown in Figure 4-4, new housing on the Hagar Site would be visible in the foreground and would substantially change the existing view, resulting in a significant impact on this view. New development under the 2021 LRDP would be visible against the existing tree line in the background from Glenn Coolidge Drive looking north towards the main residential campus southwest of the Hagar Site. However, as discussed in Section 3.1, "Aesthetics," new development associated with the 2021 LRDP as part of the UC Santa Cruz Design Review Process, Campus Standards Handbook requirements, and Physical Design Framework guidelines, would include landscaping and other features consistent with existing environmental and site conditions, which would soften the visual interface between new development under the 2021 LRDP. In addition, new structures would be largely obscured from public viewpoints due to intervening topography and vegetation. For these reasons, the 2021 LRDP's contribution to impacts on scenic vistas along Glenn Coolidge Drive would not be cumulatively considerable.

Source: Figure produced by Ascent Environmental in 2020

Figure 4-2 Cumulative Viewpoint Locations

This page intentionally left blank.

Before

After

190101118.01 GRX 037

Source: Figure produced by Ascent Environmental in 2020

Figure 4-3 Cumulative View 1 - View from Empire Grade

Before

After

190101118.01 GRX 036

Source: Figure produced by Ascent Environmental in 2020

Figure 4-4 Cumulative Viewpoint 2 – View from Glen Coolidge Drive

SUBSTANTIAL ADVERSE EFFECT ON A SCENIC VISTA

Cumulative projects reviewed for this EIR would occur both within and adjacent to the LRDP area. Due to its location, the main residential campus provides views of the city, coast, and the Monterey Bay from various vantage points. Views of the coast and Monterey Bay are not available from the Westside Research Park due to intervening trees and landscaping present within Natural Bridges State Beach and the DeAnza Mobile Home Park located along Delaware Avenue. Cumulative projects within and adjacent to the LRDP area have the potential to impact scenic views; however, the City, County, and UC Santa Cruz have adopted policies (e.g., City of Santa Cruz General Plan policies CD1.1.4, CD1.2.1, CD 1.3.1, and CD1.4.1, as stated in Section 3.1, "Aesthetics") to protect publicly accessible view corridors and designated scenic vistas; it is expected that, with these policies in place, there would be no cumulatively considerable impact without the 2021 LRDP.

As discussed in Section 3.1, "Aesthetics" of this Draft EIR, much of the proposed development under the 2021 LRDP would not be visible from viewpoints outside of the main residential campus due to topography and intervening vegetation. Further, it is not anticipated that views within campus would be damaged or substantially altered because new development would comply with existing design review processes and would be clustered with and complimentary to existing development, such that long distance views towards scenic areas would be maintained. While new development under the 2021 LRDP could alter views throughout campus, changes would not be obtrusive due to the distance between the viewer and the proposed development; the scale of development, and landscaping; and the presence of other existing development and trees throughout the campus. Viewers would still experience the impression of expansive views throughout campus even after development of new structures and buildings. New development resulting from 2021 LRDP implementation would be required to comply with processes, and development standards outlined UC Santa Cruz Design Review Process and Campus Standards Handbook, and generally be consistent with the Physical Design Framework. With respect to potential development at Westside Research Park, the development of mixed-use land use (i.e., additional employee/staff housing with supporting retail) at this location would generally be low-rise (1-3 stories) structures adjacent to the existing academic/administrative space located on site. Therefore, views from the adjacent Antonelli Pond are not anticipated to change considerably. As a result, the 2021 LRDP's cumulative impact on scenic vistas would not be cumulatively considerable.

ADVERSE EFFECT ON THE AESTHETIC QUALITY OF THE COWELL LIME WORKS HISTORIC DISTRICT

The Cowell Lime Works Historic District (historic district) located in the primary entrance area to the main residential campus, is considered a scenic resource. Related on-campus projects that may occur proximate to the Historic District have the potential to damage the aesthetic quality of the scenic resource. However, as the district is largely obscured from view by topography and intervening vegetation (refer to Viewpoint 3 in Section 3.1, "Aesthetics," and since the City, County, and UC Santa Cruz have adopted policies to protect the visual integrity of scenic resources, off-campus projects are not considered cumulatively considerable with respect to impacts to the district.

The 2021 LRDP proposes development to the east and west of the historic district (See Section 2, "Project Description, Figure 2-4). and some limited development could occur within the historic district, in addition to rehabilitation of historic buildings, for academic & support facilities, community-facing programs, and visitor resources. All new development under the 2021 LRDP would be required to comply with the UC Santa Cruz Design Review Process and standards contained in the Campus Standards Handbook, and must be generally consistent with the 2021 LRDP Physical Planning Principles and the UC Santa Cruz Physical Design Framework which include requirements, standards, and guidelines for consideration of and consistency with adjacent development. Further, implementation of Mitigation Measure 3.4-4a would ensure that all new development under the 2021 LRDP would be conducted in a manner consistent with Secretary of the Interior Standards and would not affect the integrity (including visual integrity) of the district. As a result, implementation of the aforementioned mitigation measure would reduce 2021 LRDP-related development to less than cumulatively considerable by preserving the integrity of the district as a historical and visual resource.

DEGRADE EXISTING VISUAL CHARACTER OR QUALITY

Visual character changes are anticipated on campus and in its vicinity as a result of the cumulative projects. The greatest potential for cumulative impacts related to visual character in the LRDP area exists along the perimeter of the main residential campus and in areas adjacent to the Westside Research Park where approved and future projects would interface with development in the local community. Development both on campus and off campus could increase the urban nature of the area and impact the visual character or quality; however, it would not necessarily degrade the visual character. The City, County, and UC Santa Cruz implement adopted policies and review procedures to evaluate visual character and compatibility of proposed projects. As a result, there is not a cumulatively considerable impact without the 2021 LRDP.

Land uses under the 2021 LRDP would modify the existing visual character and quality within the main residential campus and at the Westside Research Park; however, most of the new development would be adjacent to existing development and would comply with the UC Santa Cruz Design Review Process and standards contained in the Campus Standards Handbook, and Physical Design Framework. Additionally, implementation of Mitigation Measures 3.1-3a, 3.1-3b, and 3.1-3c would reduce the 2021 LRDP's contribution to cumulative impacts related to changes to visual character by requiring that the siting, development patterns, and architecture of new development be consistent with the 2021 LRDP Physical Planning Principles and Guidelines, including those related to building height and massing, in order to ensure that the visual character and quality of scenic areas are not substantially degraded. Therefore, the 2021 LRDP's cumulative impact on the degradation of existing visual character would not be cumulatively considerable.

CREATE NEW SOURCE OF LIGHT AND GLARE

The cumulative effects of lighting are visible over a wide area because of the potential for lighting from a number of projects to create skyglow. Under existing conditions, the UC Santa Cruz main residential campus, Westside Research Park, and surrounding areas generate light and glare in the form of reflected building surfaces, streetlights, illumination for paths, interior and exterior lights in buildings, and other noteworthy structures. As described in Impact 3.1-4, implementation of the 2021 LRDP would introduce new sources of light and glare; however, while these fixtures would be similar in nature to existing sources, implementation of Mitigation Measures 3.1-4 would further ensure that the contribution of the 2021 LRDP to light and glare would not be cumulatively considerable.

SUMMARY

In summary, development under the 2021 LRDP would not make a cumulatively considerable contribution to cumulative aesthetic impacts, and impacts would be **less than significant**.

4.3.2 Agriculture and Forestry Resources

CONVERT LANDS DESIGNATED AS IMPORTANT FARMLANDS TO NON-AGRICULTURAL USE

The cumulative setting for agricultural and forest resources is the region which is defined to include Santa Cruz County. As of 2016, Santa Cruz County had approximately 13,437 acres of Prime Farmland, 2,335 acres of Farmland of Statewide Importance, and 3,521 acres of Unique Farmland (DOC 2019). Since 2014, there has been a 2 percent decline in the acreage of farmland, from 19,947 to 19,544 acres (DOC 2019). Local farmland decreased by 19 percent from 300 to 252 acres. Prime Farmland decreased by 2 percent, from 13,688 to 13,437 acres. Farmland of Statewide Importance decreased by 3 percent, from 2,405 to 2,335 acres, and Unique Farmland decreased by 1 percent, from 3,554 to 3,521 acres (DOC 2019). Lands converted from agricultural use to non-agricultural use typically do not return to agricultural use at a later date but become part of a more urban condition.

Although none of the past, current, and future projects identified in Table 4-2 are anticipated to result in a substantial reduction in Important Farmland in the county. further urban development within the county, including development guided by city and county general plans (i.e., City of Santa Cruz and County of Santa Cruz) and shown in the countywide data presented above, could result in significant cumulative impacts to agriculture resources when viewed in combination with implementation of the 2021 LRDP. Therefore, the cumulative impact from the conversion of Important Farmland (which includes Prime, Farmland of Statewide Importance, and Unique Farmland) to non-agricultural uses within Santa Cruz County is considered significant.

As discussed in Section 3.2 of this EIR, the 2021 LRDP would result the conversion of approximately 2 acres of farmland within the main residential campus (lower campus) to nonagricultural uses (employee housing). However, based on the LESA model evaluation the 2-acre area is not considered a significant agricultural resource that contributed to regional agricultural lands/operations in the region due to its limited acreage and water supply, as well as its relative isolation compared to other agricultural lands in the region. Therefore, the 2 acres of farmland under the 2021 LRDP does not represent a cumulatively considerable contribution to agricultural lands in the county, and similarly, its conversion to non-agricultural uses would not be considered cumulatively considerable.

RESULT IN A LOSS OR CONVERSION OF FOREST LAND TO NON-FOREST USE

Forested lands and timberland occupy a substantial portion of Santa Cruz County with large areas of timber production in the Santa Cruz Mountains. The Timber Production (TP) zoning district extends across 71,000 acres of the County, primarily in the North Coast and Mountain Regions (County of Santa Cruz 2017). The total production value of timber resources for Santa Cruz County in 2018 was approximately $10.2 million, an approximately 30 percent increase from 2017 (Santa Cruz County 2018). Development of past, current, and future projects continue to alter land uses in Santa Cruz County. Urban development as guided by city and county general plans (i.e., City of Santa Cruz and County of Santa Cruz), as shown in Table 4-2, has not and would not result in the conversion of substantial forestland within Santa Cruz County. Based on the projects listed, development has and would occur within existing developed areas and not within lands designated as forestland or timberland. Therefore, the cumulative impact from the loss or conversion of forest land to non-forest use is not considered significant.

Further, the 2021 LRDP would not result in the rezoning of timber harvest lands. Development under the 2021 LRDP could impact up to approximately 123 acres of forested land cover, including redwood and coastal mixed hardwood, however UC Santa Cruz would comply with the Forest Practice Rules through THPs and TCPs, as necessary. In addition, UC Santa Cruz would maintain 10 percent or greater tree cover such that development areas would still be considered forested land per Public Resources Code Section 12220(g). Therefore, the 2021 LRDP would not reduce timberland and would maintain forested land cover such that the contribution to the 2021 LRDP would not be cumulatively considerable.

SUMMARY

In summary, development under the 2021 LRDP would not make a cumulatively considerable contribution to cumulative impacts on agriculture and forestry resources, and impacts would be **less than significant**.

4.3.3 Air Quality

The geographic scope for emissions of criteria air pollutants is the North Central Coast Air Basin (NCCAB) and the local area for toxic air contaminants (TAC) and odors. Future levels of emission from cumulative projects would be a function of the type and scale of the projects under construction and operation, including those discussed in Section 4.2.2, "Cumulative Projects Considered." Cumulative development in the region will continue to increase the concentration of pollutants from traffic, natural gas combustion in buildings, area sources, and stationary sources, but would be partially offset by state and federal policies that set emissions standards for mobile and non-mobile sources. The proposed land uses under the 2021 LRDP would result in an increase of air pollutant emissions from on-campus area sources, stationary sources, and mobile sources. The 2021 LRDP would also result in increased traffic and

related emissions throughout the region because of vehicular travel associated with new students and staff. Therefore, cumulative development in the region combined with 2021 LRDP implementation could result in a significant cumulative air quality impact.

CONSTRUCTION GENERATED EMISSIONS

Monterey Bay Air Resources District (MBARD) has established a significance threshold of 82 lb/day for emissions of respirable particulate matter with an aerodynamic diameter of 10 micrometers (PM_{10}), and 137 lb/day for emissions of ROG and NO_X, which are ozone precursors. The NCCAB, which is under the jurisdiction of MBARD, is currently in attainment of all federal and state ambient air quality standards with the exception of ozone and PM_{10} California standards (CARB 2018). MBARD considers emissions of ROG, NO_X, and PM_{10} from an individual project that exceed the applicable mass emissions thresholds to be a substantial contribution to a cumulative impact on regional air quality, and projects that do not exceed the project-level thresholds may conclude that they are not cumulatively considerable. Estimated construction emissions associated with proposed development under the 2021 LRDP would exceed MBARD daily NO_X emissions threshold. Implementation of Mitigation Measure 3.3-1 would reduce the generation of NO_X emissions related to construction under the 2021 LRDP below the MBARD threshold, consistent with the AQMP, by requiring contractors to develop and implement a plan demonstrating that the off-road equipment used on-site to construct 2021 LRDP projects would achieve a fleet-wide average 41 percent reduction in NO_X exhaust emissions. With implementation of Mitigation Measure 3.3-1, the 2021 LRDP would not exceed MBARD's applicable mass emissions thresholds for ROG, NO_X, and PM_{10}; because these are cumulative thresholds, the 2021 LRDP's contribution (after mitigation) would not be cumulatively considerable.

OPERATIONAL EMISSIONS

NCCAB is currently designated as a nonattainment area for ozone and PM_{10}. As noted above, MBARD considers emissions of ROG and NO_X (ozone precursors), and PM_{10} from an individual project that exceed the applicable mass emissions thresholds to be a substantial contribution to a cumulative impact on regional air quality.

Implementation of individual projects under the 2021 LRDP would result in long-term project-generated emissions of criteria air pollutants, particularly emissions of the ozone precursor ROG and PM_{10}. Implementation of Mitigation Measure 3.3-2 would reduce the generation of ROG and PM_{10} emissions related to implementation of the 2021 LRDP. As a result, ROG emissions would not exceed MBARD significance criteria, however the mitigated PM_{10} emissions would still exceed MBARD significance criteria. As noted in Section 3.3, "Air Quality," with the majority of PM_{10} emissions resulting from roadway fugitive dust, additional mitigation of these emissions from non-university operations (e.g., motor vehicle use), beyond the actions described above in Mitigation Measure 3.3-3 and 3.16-1, is not considered feasible. Because implementation of the 2021 LRDP would exceed the applicable mass emissions thresholds for PM_{10}, the 2021 LRDP's contribution to regional air quality would be cumulatively considerable. It should be noted that according to Appendix A of the CalEEMod User's Guide, daily roadway fugitive dust emissions from paved roads are calculated based on a formula that accounts for roadway particle sizes, road surface silt loading, average vehicle weight, local precipitation levels, and VMT. None of these variables can be feasibly changed except for VMT, which is already mitigated under Mitigation Measure 3.16-1. With respect to the cumulative development that would occur outside of the LRDP area, UC Santa Cruz has little direct control over fugitive PM emissions from roadway dust nor the use of zero-emissions vehicles from non-university mobile sources. Further PM_{10} reductions would require mitigation of these sources of PM_{10} emissions. Therefore, PM_{10} emissions would remain above the established thresholds, and as a result the 2021 LRDP's contribution would remain cumulatively considerable.

CONSISTENCY WITH APPLICABLE AIR QUALITY PLAN

Santa Cruz County is in an area of nonattainment for ozone and PM_{10} under to the California Ambient Air Quality Standards (CAAQS). As a means of reducing regional ambient ozone concentrations in the long term, MBARD sets daily and annual significance thresholds for emissions of ozone precursors reactive organic gases (ROG) and oxides

of nitrogen (NO_X), as specified in the Air Quality Management Plan (AQMP). As discussed in Impact 3.3-3, a consistency analysis with the AQMP is required for a program-level environmental review, such as the 2021 LRDP. Additionally, consistency with regional growth projections, such as those developed by the Association of Monterey Bay Area Governments (AMBAG), is considered as part of the overall AQMP consistency analysis. The evaluation of consistency is based on a comparison of the plan with the land use and transportation control measures and strategies outlined in the AQMP to reach attainment of standards. If the plan is consistent with these measures, the plan is considered consistent with the AQMP. MBARD utilizes AMBAG growth predictions in its AQMP projected emissions estimates, and the growth projected in the 2021 LRDP is commensurate with the growth accounted for in the AQMP. However, the PM_{10} emissions occurring under operation of the 2021 LRDP would exceed the MBARD daily threshold of significance even with implementation of feasible mitigation (Mitigation Measure 3.3-2). For this reason, the project would conflict with MBARD's long-term air quality planning efforts to achieve and maintain attainment with the ozone CAAQS and by exceeding thresholds established for achieving attainment within the region (inclusive of other related development), the 2021 LRDP's contribution would be cumulatively considerable. No additional feasible mitigation would reduce this contribution.

MOBILE SOURCE CO CONCENTRATIONS

MBARD has a project-level carbon monoxide (CO) threshold of 550 pounds per day, which may be indicative of a localized impact when this level of CO is produced by an individual project, but is inappropriate for a 2021 LRDP, where these CO levels would be dispersed throughout the LRDP area. A more accurate threshold at the plan level is tied to congestion at a particular roadway intersection coupled with a high volume of cars; it is only under these circumstances that CO levels are exceeded. Because MBARD does not have CO significance criteria directly related to intersection traffic volumes, MBARD was consulted for approval to use screening criteria for CO emissions at high-volume intersections developed by Sacramento Metropolitan Air Quality Management District (SMAQMD). According to SMAQMD, a project that would result in an affected intersection experiencing more than 31,600 vehicles per hour would result in a significant CO impact.

Intersection volumes in the project vicinity under the 2021 LRDP would not exceed 10,000 vehicles per hour even under Cumulative with Project conditions. As a result, development-generated, operational mobile-source emissions of CO would not violate an air quality standard or contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations of CO. Therefore, the 2021 LRDP's contribution to mobile source CO concentrations would not be cumulatively considerable.

CONSTRUCTION EMISSIONS OF TOXIC AIR CONTAMINANTS

Toxic air contaminants (TACs) are pollutants of localized concern. The emissions of multiple TACs by sources, including diesel particulate matter exhaust (diesel PM), can result in a cumulative impact to air quality in locations where receptors are exposed to high concentrations of TACs over the long term. Construction-related activities associated with projects under the 2021 LRDP would result in temporary, short-term project-generated emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment used during demolition, site preparation, building construction, paving, the exhaust of on-road haul truck travel, and application of architectural coatings. As discussed in Section 3.3, "Air Quality," the non-cancer risks from construction TAC emissions would be below MBARD's thresholds of 10 in one million for cancer risk and an HI of 1.0 for non-cancer risk. In addition, projects under the 2021 LRDP would comply with Rule 424 and unsafe exposure to asbestos would be avoided. . The rule requires UC Santa Cruz and its contractors to notify MBARD of any renovation or demolition activity at least 10 working days prior to commencement of demolition/renovation. When removing any Regulated Asbestos Containing Material (RACM), MBARD regulations must be followed. This notification includes a description of structures and methods utilized to determine whether asbestos-containing materials are potentially present. All RACM found on the site must be removed prior to renovation activity and there are specific requirements for surveying, notification, removal, and disposal of material containing asbestos. Cumulative projects would also be required to comply with MBARD's thresholds for construction TAC emissions and Rule 424. Further, cumulative projects in the LRDP area,

whose construction emissions could overlap with those from the project, were included as part of the HRA evaluation. The incremental health risk from TAC emissions associated with on-campus development including development under the 2021 LRDP would be below the applicable MBARD thresholds; therefore, the 2021 LRDP's contribution to cumulative impacts related to construction emissions TACs would not be cumulatively considerable.

OPERTATIONAL EMISSIONS OF TOXIC AIR CONTAMINANTS

With respect to operational TAC emissions, 2021 LRDP implementation would likely include new stationary sources such as additional boilers, emergency generators, laboratories, a new paint booth, increased vehicular traffic, and increased gasoline storage facilities. New facilities with the potential to generate stationary sources of TACs would be required to obtain a permit from MBARD. Facilities with the potential to generate health risks above established risk levels, would be required to distribute public notifications to notify families of children enrolled and all persons within 1,000 feet of the source before approving any permits. The health risk assessment completed for the 2021 LRDP development concluded that the probability of contracting cancer for the maximally exposed individual resident MEIR (i.e., the modeled receptor location at a residential land use that has the highest risk) would not exceed 1.8 in one million and ground-level concentrations of TACs would result in a HI no greater than 0.1 for non-cancer risk. Cumulative projects in the LRDP area were included as part of the HRA evaluation. With respect to cumulative projects outside of the LRDP area, these projects are largely residential in nature and would not be expected to substantially contribute to TAC emissions beyond what was considered in the HRA. The incremental health risk from TAC emissions associated with on-campus development including development under the 2021 LRDP would be below the applicable MBARD thresholds; therefore, the 2021 LRDP's contribution to cumulative health risk impacts would not be cumulatively considerable.

ODORS

Odors resulting from the construction of new land uses that would be allowed under the 2021 LRDP would be intermittent and temporary and would dissipate rapidly from the source with an increase with distance. Although construction activities would be spread over a relatively long-term period (approximately 18 years), odors resulting from construction activity would occur in different areas of the 2,000-acre main residential campus or the Westside Research Park at different times over the 2021 LRDP period, not exposing any single area or individual receptor to construction-related odors for extended periods of time. Operational uses under the 2021 LRDP would result in in various levels of odorous emissions, ranging from odors associated with motor vehicle operation to food preparation. Diesel-fueled delivery trucks would haul materials to and from the academic and administrative, residential, recreational, and food service areas; however, these types of sources are not different from those that currently deliver materials to existing land uses in the LRDP area and other parts of the City. No odor complaints regarding UC Santa Cruz have been received by MBARD (Searson, pers. comm., 2020), thus it is unlikely similar sources under the 2021 LRDP would result in new complaints. Other potential sources of odors include research activities, such as through general laboratory research, and handling of volatile organic materials. These odor sources would be contained within buildings in the campus core and not likely result in objectionable odors affecting a substantial number of people. Similarly, the cumulative projects listed in Table 4-2 are not typically associated with substantial odors with the possible exception of the wastewater treatment facility at 112 California Street (Cumulative Project ID 51). However, this facility would be constructed adjacent to the existing wastewater treatment facility operated by the City and would be located over a mile from the LRDP area. As a result, development under the 2021 LRDP would not be considered cumulatively considerable with the aforementioned projects such that the combined odors would be substantial and adversely affect substantial number of people. Therefore, the contribution of campus development under the 2021 LRDP to odors would not be cumulatively considerable.

SUMMARY

In summary, development under the 2021 LRDP would result in emissions that would make a considerable contribution to cumulative, operational air quality impacts, and as a result, the 2021 LRDP would conflict with MBARD's long-term air quality planning efforts to achieve and maintain attainment with the ozone CAAQS. Therefore, the project's cumulative air quality impacts would be **significant and unavoidable**.

4.3.4 Archaeological, Historical, and Tribal Cultural Resources

The cumulative context for the cultural resources cumulative analysis considers the broad regional system of which the resources are a part. The cumulative context for archaeological resources, human remains, and tribal cultural resources is the former territory of the Ohlone tribelet, recorded in Mission Santa Cruz records as Uypi. The cumulative context for historical resources is UC Santa Cruz and the city of Santa Cruz, where common patterns of historic-era settlement have occurred over roughly the past two centuries.

Because all significant cultural resources are unique and nonrenewable members of finite classes, meaning there are a limited number of significant cultural resources, all adverse effects erode a dwindling resource base. The loss of any one archaeological site could affect the scientific value of others in a region because these resources are best understood in the context of the entirety of the cultural system of which they are a part. The cultural system is represented archaeologically by the total inventory of all sites and other cultural remains in the region. As a result, a meaningful approach to preserving and managing cultural resources must focus on the likely distribution of cultural resources, rather than on a single project or parcel boundary.

Proper planning and appropriate mitigation can help to capture and preserve knowledge of such resources and can provide opportunities for increasing our understanding of the past environmental conditions and cultures by recording data about sites discovered and preserving artifacts found. Federal, state, and local laws are also in place that protect these resources in most instances. Even so, it is not always feasible to protect these resources, particularly when preservation in place would make projects infeasible, and for this reason the cumulative effects of past and present projects in the Santa Cruz area could result in a potentially significant cumulative impact on cultural resources.

UNIQUE ARCHAEOLOGICAL RESOURCES

Development under the 2021 LRDP could be located on properties that contain known or unknown archaeological resources and ground-disturbing activities could result in discovery of or damage to yet undiscovered archaeological resources as defined in CEQA Guidelines Section 15064.5. Implementation of Mitigation Measure 3.4-1 would require UC Santa Cruz to develop site-specific actions in coordination with the appropriate federal, state, and/or local agency(ies) and tribes to avoid, move, record, or otherwise treat the archaeological resource appropriately, in accordance with pertinent laws and regulations, such that the resource would not be substantially and adversely affected. With implementation of Mitigation Measure 3.4-1, potential impacts to archaeological resources would be reduced such that 2021 LRDP development would not substantively affect the archaeological context of the area and the 2021 LRDP would not be considered cumulatively considerable with respect to other development in the vicinity of the LRDP area.

TRIBAL CULTURAL RESOURCES

Future development associated with the 2021 LRDP would involve land development activities that could cause a substantial adverse change in the significance of a tribal cultural resource. Although no specific tribal cultural resources, as defined in PRC Section 21074, have been documented on the main residential campus or the Westside Research Park, the campus is located in a region where significant resources have been recorded. Compliance with PRC Section 21080.3.2 and Section 21084.3 (a) would ensure that treatment and disposition of the tribal cultural occurs in a manner consistent with the California Native American Heritage Commission guidance. Further, implementation of Mitigation Measure 3.4-2 would require UC Santa Cruz to provide the culturally affiliated tribe the to monitor construction and by requiring appropriate and respectful treatment (i.e., proper care as determined

through preparation and implementation of a treatment plan that is approved by the tribe) of artifacts if they are recovered. With compliance with existing regulations and implementation of Mitigation Measure 3.1-2, development under the 2021 LRDP would not contribute to a cumulative loss of tribal cultural resources in the area, and as a result would not be cumulatively considerable.

HUMAN REMAINS

Construction and excavation activities associated with project development could unearth previously undiscovered or unrecorded human remains if they are present. Compliance with California Health and Safety Code Section 7050.5 and California Public Resources Code (PRC) Section 5097 would provide an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered such that any effects would not be considerable. As a result, the 2021 LRDP would not contribute to a cumulative loss or adverse effect on human remains in the area, and the 2021 LRDP's contribution to cumulative impacts to human remains would not be cumulatively considerable.

HISTORICAL RESOURCES

Historical resources on campus have been identified through historic building surveys and cultural resource studies. The cumulative loss of historic resources at UC Santa Cruz and the Santa Cruz area is considered significant. Known historic resources on the UC Santa Cruz campus include the Cowell Lime Works Historic District and the potential discontiguous Campus Core district. While no modifications to the buildings in these districts are envisioned under the 2021 LRDP, future development under the plan could result in the loss or modification of buildings or structures that have not yet been evaluated for historical significance. Implementation of Mitigation Measure 3.4-4a, 3.4-4b, and 3.4-4c would require a district evaluation of the Campus Core, a historic structure evaluation of resources prior to ground-disturbing activities, and would require all report recommendations be implemented to offset the project's contribution. However, it is possible that a historic building would need to be demolished or altered in such a way that it would no longer convey its historic significance. Therefore, the project's contribution to cumulative historic resource impacts would be potentially cumulatively considerable. No additional mitigation, beyond that identified in Section 3.4, "Archaeological, Historical, and Tribal Cultural Resources," is available to reduce the 2021 LRDP's contribution.

SUMMARY

Due to the cumulatively considerable contribution of 2021 LRDP-related development to potential historic resources impacts, the 2021 LRDP would result in **significant and unavoidable** impacts to cultural resources.

4.3.5 Biological Resources

The context for cumulative impacts on biological resources is the LRDP area, the range of affected special-status species and sensitive habitats, as well as adjacent migration and movement corridors (e.g., natural habitat areas surrounding the LRDP area, the Pacific flyway for migratory birds) that are connected to the LRDP area.

Past, present, and future development projects have and likely will result in impacts on special-status plants, special-status wildlife, sensitive natural communities, riparian habitat, state or federally protected wetlands, wildlife movement corridors, and native wildlife nurseries. Most of the projects in Table 4-2 would be discretionary and subject to environmental review under CEQA or otherwise subject to regulations protective of biological resources (e.g., ESA, CESA, and California Fish and Game Code), and would be required to implement measures to avoid, reduce or compensate for adverse effects on sensitive natural resources. The existing cumulative impacts of these projects, activities, and disruptions to ecosystem and biophysical processes (e.g., climate change, invasive species invasions) on special-status species, sensitive natural communities, riparian habitat, state and federally protected wetlands, and wildlife movement corridors and nursery sites have been substantial, and are considered significant.

As analyzed and described in Section 3.5, "Biological Resources," implementation of projects under the 2021 LRDP would result in several direct and indirect impacts related to the disturbance or loss of special-status plants, special-status wildlife and wildlife habitat, riparian habitat, sensitive natural communities, state or federally protected wetlands, wildlife movement corridors, wildlife nurseries, and conflicts with the provisions of the Ranch View Terrace HCP. Implementation of the 2021 LRDP, in combination with other past, present, and reasonably foreseeable projects that have resulted or would result in similar impacts, would contribute to the significant cumulative effects on these biological resources if left unmitigated.

The following discusses residual cumulative impacts for each biological resource addressed in this EIR in consideration of the relevant mitigation measures included in Section 3.5, "Biological Resources."

SPECIAL-STATUS PLANTS

Project activities under the 2021 LRDP would result in ground disturbance, vegetation removal, and conversion of natural habitat, which could result in direct loss of special-status plants or habitat. This would contribute to significant cumulative impacts on special-status plants. However, implementation of Mitigation Measures 3.5-1a, 3.5-1b, and 3.5-1c would reduce the 2021 LRDP's contribution to this impact, because they would require UC Santa Cruz to conduct reconnaissance-level surveys of projects under the 2021 LRDP to determine the likelihood of presence of special-status plants, protocol-level surveys for special-status plants if determined to be likely to occur, implement avoidance measures and compensation for impacts on special-status plants, and avoid the introduction or spread of invasive plants and plant pathogens. With implementation of these mitigation measures, the 2021 LRDP is not expected to substantially reduce the abundance or viability of special-status plant populations. Because the 2021 LRDP would not contribute to potential loss or net loss of habitat within the cumulative context, the 2021 LRDP's contribution to significant cumulative impacts on special-status plants would not be cumulatively considerable.

SPECIAL-STATUS WILDLIFE

Project activities under the 2021 LRDP would result in ground disturbance; vegetation removal; conversion of habitat; and the use of heavy machinery, vehicles, and construction crews, which could result in the disturbance or direct loss of special-status wildlife. Several special-status wildlife species have been adversely affected as a result of historic and ongoing habitat loss across their range, which in some cases has been a contributing factor in their listing under ESA or CESA. Other special-status wildlife species have extremely limited ranges or narrow habitat requirements; thus, loss of habitat within the range of these species could result in the narrowing or exclusion of the species from its range. This would contribute to significant cumulative impacts. Mitigation Measures 3.5-1a, 3.5-2a, 3.5-2b, 3.5-2c, 3.5-2d, 3.5-2e, 3.5-2f, 3.5-2g, 3.5-2h, 3.5-2i, 3.5-2j, 3.5-2k, 3.5-2l, 3.5-2m, 3.5-2n, and 3.10-5a would reduce these direct and indirect impacts on special-status wildlife to less-than-significant levels because protective actions, including reconnaissance-level surveys, focused or protocol-level surveys, implementation of avoidance measures (e.g., physical avoidance, seasonal avoidance), and compensation for unavoidable loss of special-status wildlife species (potentially through incidental take permitting for listed species) would reduce the potential impacts of injury, mortality, or other disturbance on individual animals and their habitat. Implementation of these mitigation measures would substantially reduce the 2021 LRDP's contribution to the potential loss of special-status wildlife and wildlife habitat, such that the 2021 LRDP would not result in a net loss of sensitive habitat within the cumulative context. Therefore, the 2021 LRDP's contribution would not be cumulatively considerable.

SENSITIVE NATURAL COMMUNITIES AND RIPARIAN HABITAT

Project activities under the 2021 LRDP could adversely affect sensitive natural communities and riparian habitat if these habitats are present within the project sites and are subject to project activities such as vegetation removal or ground disturbance. These activities could result in loss or degradation of these sensitive habitats, which would contribute to significant cumulative impacts. Implementation of Mitigation Measures 3.5-1a, 3.5-1c, 3.5-3a, 3.5-3b, and 3.5-3c would reduce the 2021 LRDP's contribution to this significant cumulative impact on sensitive natural

communities and riparian habitat because they would require UC Santa Cruz to identify and avoid sensitive natural communities and riparian habitat or compensate for unavoidable losses of these resources. Implementation of these mitigation measures would reduce the 2021 LRDP's contributions to the potential loss or degradation of sensitive habitats such that no net loss would occur as a result of 2021 LRDP implementation. Therefore, the 2021 LRDP to contribution to significant cumulative impacts on sensitive natural communities and riparian habitat would not be cumulatively considerable.

STATE AND FEDERALLY PROTECTED WETLANDS

Implementation of the 2021 LRDP could adversely affect state or federally protected wetlands if project activities (e.g., vegetation removal, ground disturbance, use of heavy machinery) occur within or adjacent to these habitats, particularly if these features have not been previously identified. This would contribute to significant cumulative impacts. Implementation of Mitigation Measures 3.5-1a and 3.5-4 would substantially reduce the 2021 LRDP's potential contribution to this significant cumulative impact because it would require delineation of the boundaries of state and federally protected wetlands, avoidance of these features, or compensation for unavoidable impacts on the wetlands. Thus, implementation of these mitigation measures would reduce the 2021 LRDP's contribution to significant impacts on state and federally protected wetlands within the cumulative context such that no net loss of wetlands would occur. Therefore, the 2021 LRDP's cumulative impact on state and federally protected wetlands would not be cumulatively considerable.

WILDLIFE MOVEMENT CORRIDORS AND NURSERY SITES

Implementation of the 2021 LRDP could directly and indirectly adversely affect wildlife movement corridors and nursery sites if project activities occur within or adjacent to these areas. This would contribute to significant cumulative impacts. Implementation of Mitigation Measures 3.5-1a, 3.5-3a, 3.5-3b, 3.5-3c, 3.5-4, 3.5-5a, and 3.5-5b would reduce the 2021 LRDP's contribution to the significant cumulative impact on wildlife movement corridors and wildlife nursery sites because it would require identification, avoidance, or compensation for sensitive habitats (e.g., sensitive natural communities, riparian habitat, state or federally protected wetlands, monarch overwintering colonies), utilization of wildlife-friendly building design and fencing to minimize the risk of bird strikes or wildlife entanglements, and identification and retention of important habitat for wildlife nursery sites. Thus, implementation of these mitigation measures would limit the 2021 LRDP's contribution to the combined level of interference on wildlife movement through wildlife corridors and nursery sites within the cumulative context by maintaining established wildlife corridors through campus. Therefore, the 2021 LRDP's cumulative impact on wildlife movement corridors and nursery sites would not be cumulatively considerable.

CONFLICT WITH LOCAL POLICIES AND ORDINANCES

Implementation of the 2021 LRDP could result in a conflict with City of Santa Cruz and County of Santa Cruz General Plan policies adopted to protect biological resources, such as rivers, streams, creeks, wetlands, riparian habitat, special-status plants, special-status wildlife, and sensitive habitats. Pursuant to the UC's constitutional autonomy, development and uses on property under control of the UC that are in furtherance of the university's educational purposes are not subject to local land use regulation, including City of Santa Cruz and County of Santa Cruz General Plan policies regarding protection of biological resources. Although UC Santa Cruz is not subject to City and County policies and regulations, UC Santa Cruz strives to be consistent with local policies, where feasible. As discussed in Section 3.5, "Biological Resources," implementation of mitigation measures would reduce the 2021 LRDP's impact to biological resources, such as rivers, streams, creeks, wetlands, riparian habitat, special-status plants, special-status wildlife, and sensitive habitats, such that no conflicts are anticipated. Nonetheless, due to the UC's constitutional autonomy, development under the 2021 LRDP is not subject to local plans and policies, and as a result, the 2021 LRDP is not cumulatively considerable with respect to potential conflicts with the plans/policies of the City and County General Plans.

CONFLICT WITH THE PROVISIONS OF THE RANCH VIEW TERRACE HCP

Implementation of the 2021 LRDP could result in a conflict with the Ranch View Terrace HCP if the preserve area in Inclusion Area D is developed. This would contribute to significant cumulative impacts. Implementation of Mitigation Measure 3.5-7 would reduce the 2021 LRDP's contribution to the significant cumulative impact resulting from conflict with an adopted HCP because it would require consultation with USFWS, identification and protection of alternative preserves, or amendment of the existing HCP or preparation of a new more comprehensive HCP, or prohibition of development in IAD if the HCP cannot be amended. . Therefore, after implementation of Mitigation Measure 3.5-7, the 2021 LRDP's contribution to potential conflicts with the provisions of the Ranch View Terrace HCP would not be cumulatively considerable.

SUMMARY

In summary and for the reasons stated above, development under the 2021 LRDP would not result in a cumulatively considerable contribution with respect to cumulative impacts to significant cumulative impacts on biological resources, and impacts would be **less than significant**.

4.3.6 Energy

The geographic area considered for cumulative impacts related to energy use includes the service area for PG&E. As noted in Section 3.6, "Energy," electric and natural gas services are purchased from PG&E by UC Santa Cruz. A natural gas turbine engine located at the Central Heat Plant, a canopy solar panel array located in the East Remote Parking lot, and a solar panel array located on top of McHenry Library, also generate electricity on the main residential campus. PG&E employs various programs and mechanisms to support provision of these services to new development; various utilities charge connection fees and re-coup costs of new infrastructure through standard billings for services. Campus development under the 2021 LRDP, in combination with other development in the City and County of Santa Cruz, would contribute to the increased demand of energy.

RESULT IN UNNECESSARY, INEFFICIENT, AND WASTEFUL USE OF ENERGY

Energy would be required for the construction and operation of campus development under the proposed 2021 LRDP. Construction-related energy would be used during construction activities and not represent a long-term increase in demand. Further, construction activities conducted on-campus would not result in unusual or unique construction requirements that would result in potential wasteful energy use/consumption. Best available control technology would be used by contractors, as well as conformance to applicable requirements like MBARD requirements related to equipment idling, such that the inefficient or wasteful use of energy during construction would not occur. Operations-related energy demand would result from building energy use and increases in vehicular traffic. UC Santa Cruz would comply with the most current energy-efficient standard by achieving energy efficiency rates as required under the UC Sustainable Practice Policy Green Building targets. UC Santa Cruz is also committed to achieving LEED Silver status at minimum and is required to meet at the most current Title 24 building energy efficiency standards at minimum. Both the building energy efficiency and LEED targets which are designed to reduce energy waste and increase building energy efficiently. For these reasons, energy consumption under the 2021 LRDP through construction, building and facility operations, and transportation would not contribute to the wasteful, inefficient, or unnecessary use of energy within the cumulative context. Therefore, the project's contribution to cumulative energy demand impacts would not be cumulatively considerable,

CONFLICT, OR CREATE AN INCONSISTENCY, WITH ANY APPLICABLE PLAN, POLICY, OR REGULATION ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING ENVIRONMENTAL EFFECTS RELATED TO ENERGY

Development under the 2021 LRDP would exceed Title 24 Building Energy Efficiency Standards by at least 20 percent to reduce energy use, which establish minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building installation and roofing, and lighting. However, under the 2021 LRDP design features that reduce energy use, improve energy efficiency, and increase reliance on renewable energy sources would be incorporated into new building projects to meet the goals of the UC Carbon Neutrality Initiative as written into the UC Sustainable Practices Policy, as well as meeting the whole-building energy performance targets listed in Table 1 of Section V.A.3 in the SPP. Thus, the 2021 LRDP would adhere to the stringent building and vehicle efficiency standards as well as 2021 LRDP design features consistent with UC Carbon Neutrality goals and UC Santa Cruz's 2017 Climate & Energy Strategy (CES). Therefore, within the cumulative context, the 2021 LRDP's would not result in conflicts with applicable plans, policies, and regulations adopted for avoiding or mitigating environmental effects related to energy, and the 2021 LRDP would not be cumulatively considerable.

SUMMARY

In summary and for the reasons stated above, development under the 2021 LRDP would not result in a cumulatively considerable contribution with respect to cumulative impacts on energy resources, and impacts would be **less than significant**.

4.3.7 Geology and Soils

The study area for the cumulative impacts on geology and soils is the LRDP area. The geographic context for geotechnical impacts are site-specific, rather than regional in nature, because each development site has unique geologic considerations prevalent within the regions that would be subject to, at minimum, uniform site development and construction and regulatory standards, such as the California Building Code (CBC) standards. All projects located within and outside the LRDP area are subject to regulatory mandates in the CBC, UC Seismic Safety Policy, and UC Santa Cruz Campus Standards Handbook.

INCREASE THE RISK OF EXPOSURE OF PEOPLE OR BUILDINGS TO SEISMIC GROUND SHAKING

The LRDP area is located in a seismically active region that includes several active earthquake faults of local and regional significance, including the San Andreas fault. High accelerations generated from large magnitude earthquakes on any of the nearby active faults in the region could lead to structural damage of buildings and infrastructure if they are not designed to withstand the forces generated from those accelerations, which in turn would result in exposure of the occupants to those hazards. Development under the LDRP would be designed to comply with CBC, the UC Seismic Safety Policy, and the UC Santa Cruz Campus Standards Handbook which require the use of the most stringent seismic safety standards, consistent with all applicable regulations. Development outside of the LRDP area would also comply with the CBC as well as other state, city, or county seismic safety regulations. Thus, within the cumulative context, the 2021 LRDP's would not contribute to a cumulative geology and soils impact associated with the risk of exposure to people or buildings to seismic ground shaking. Therefore, the 2021 LRDP's contribution would not be cumulatively considerable.

INCREASE THE RISK OF EXPOSURE OF PEOPLE OR BUILDINGS TO SEISMIC-RELATED GROUND FAILURE, INCLUDING LIQUEFACTION

Development and redevelopment under the 2021 LRDP could occur on a geologic unit or soil that could become unstable. In addition, ground failure could be triggered by seismic shaking and could result in on- or off-site landslides, lateral spreading, or liquefaction, creating potential risks to life or property. All structures proposed to be constructed or redeveloped would be required to comply with the CBC, UC Seismic Safety Policy, and UC Santa Cruz Campus Standards Handbook which require buildings and infrastructure to be designed to withstand anticipated levels of ground shaking. Further, site-specific geotechnical studies and soil engineering reports would be required before consideration of approval of for all development pursuant to the 2021 LRDP. Development outside of the LRDP area would also comply with the CBC as well as other state, city, or county seismic safety regulations. Thus, within the cumulative context, the 2021 LRDP would not contribute to a cumulative geology and soils impact associated with the risk of exposure to people or buildings to seismic related ground failure, including liquefaction. Therefore, the 2021 LRDP's contribution would not be cumulatively considerable.

RESULT IN SUBSTANTIAL EROSION OR LOSS OF TOPSOIL DURING CONSTRUCTION, OPERATIONS, OR MAINTENANCE

The LRDP area is underlain by soils that range from slightly to very highly erodible, based on U.S. Soil Conservation Service classification. Highly to very highly erodible soils are present in some areas of central and north campus and in small portions of the lower campus. Implementation of the 2021 LRDP would result in erosion and loss of topsoil from vegetation removal, clearing, and grading of soils, during development and redevelopment activities. Compliance with UC Santa Cruz erosion control standards, SWRCB General Permit for Discharges of Stormwater Associated with Construction Activity, and Statewide Phase II MS4 Permit would protect against soil erosion during and as a result of construction, operations, and maintenance activities. In addition, UC Santa Cruz continues to assess the health and functionality of the existing campus storm drain system, natural drainages and karst systems, as well as proposed improvements to those systems and development of non-potable water systems. Thus, within the cumulative context, the 2021 LRDP would not contribute to a cumulative geology and soils impact associated with the erosion or loss of topsoil during construction, operations, or maintenance. Therefore, the 2021 LRDP's contribution would not be cumulatively considerable.

INCREASE THE RISK OF EXPOSURE OF PEOPLE OR BUILDINGS TO EXPANSIVE OR OTHERWISE UNSTABLE SOILS

The LRDP area includes soils with high shrink-swell potential. Development and redevelopment projects within the LRDP area on these soils could result in shrinking and swelling of soils, which can cause damage to foundations. All structures proposed to be constructed or redeveloped would be required to comply with BC, UC Seismic Safety Policy, and UC Santa Cruz Campus Standards Handbook, which require site-specific geotechnical studies and soil engineering reports to address potential risk associated with expansive or unstable soils. These site-specific geotechnical studies and soil engineering reports would evaluate potential risk associated with expansive or unstable soils and incorporate project-specific design requirements and conditions of approval for all development pursuant to the 2021 LRDP. As a result, 2021 LRDP-related impacts would be site-specific and would not contribute to a cumulative geology and soils impact associated with exposure of people or buildings to expansive or unstable soils within the cumulative context. The 2021 LRDP's contribution would not be cumulatively considerable.

INCREASE THE RISK OF EXPOSURE OF PEOPLE OR BUILDINGS TO UNSTABLE CONDITIONS DUE TO KARST TOPOGRAPHY, INCLUDING SUBSIDENCE OR COLLAPSE

The LRDP area includes karst topography, which is characterized by irregular surfaces resulting from subsidence or collapse of the bedrock and sediment into subterranean cavities that have developed within the marble bedrock.

Future development per the 2021 LRDP could result in construction of facilities on sites underlain by dolines or sinkholes, both of which are a characteristic of karst topography, that are filled with soft soil that lead to settling or collapse beneath facilities. All structures constructed or redeveloped would be required to comply with the CBC, University of California Seismic Safety Policy, and UC Santa Cruz Campus Standards Handbook, which require site-specific geotechnical studies and soil engineering reports to address potential karst hazard risks. Site-specific geotechnical studies and soil engineering reports would be conducted by geotechnical engineers and geologists experienced in karst hazards before consideration of approval of development pursuant to the 2021 LRDP. Consequently, development under the 2021 LRDP would not contribute to a cumulative geology and soils impact associated with exposure of people or buildings to unstable conditions due to karst topography, including subsidence or collapse. Therefore, the 2021 LRDP would not be cumulatively considerable.

DIRECTLY OR INDIRECTLY DESTROY UNIQUE PALEONTOLOGICAL RESOURCES

Development under the 2021 LRDP could result in the disturbance of paleontologically sensitive formations with the potential to contain paleontological resources. Potential fossil-bearing formations in the LRDP area include marine formations (Santa Margarita sandstones, Santa Cruz mudstone, and Quaternary marine terrace deposits) and sedimentary formations (Quaternary non-marine terrace deposits and doline deposits). Implementation of Mitigation Measure 3.7-6 would require paleontological awareness training for construction personnel on projects located within potential fossil-bearing formations. If paleontological resources are discovered during ground-disturbing activities, Mitigation Measure 3.7-6 requires that a qualified paleontologist evaluate the discovery and notify UC Santa Cruz, and that appropriate treatments are implemented to document and protect the resources. With implementation of this mitigation measure, the 2021 LRDP would not contribute to a broader geology and soils impact within the cumulative context associated with disturbance of paleontological resources. Therefore, the 2021 LRDP's contribution would not be cumulatively considerable.

SUMMARY

In summary and for the reasons stated above, the 2021 LRDP would not result in a cumulatively considerable contribution with respect to cumulative impacts on geology and soils, and the impacts would be **less than significant**.

4.3.8 Greenhouse Gas Emissions and Climate Change

As discussed in Section 3.8, "Greenhouse Gas Emissions and Climate Change," the quantity of greenhouse gas (GHG) emissions that has accumulated in the atmosphere is enormous and has resulted in climate change, which is a significant cumulative impact. Because climate change is a global phenomenon, the impacts of GHG emissions are inherently cumulative. Therefore, the analysis under Impact 3.8-1 and Impact 3.8-2 reflects the cumulative impact of the proposed 2021 LRDP on global climate. As described under those impacts, implementation of the 2021 LRDP would not conflict with applicable plans, policy, or regulations for GHG emission reduction, and implementation of Mitigation Measure 3.8-1 would reduce annual GHG emissions generated by the UC Santa Cruz campus under the 2021 LRDP by 6,907 MTCO2e, which is needed to reduce the campus's 2040 emissions to 60 percent below 1990 levels. Therefore, with mitigation, the 2021 LRDP's contribution to GHG emissions would not be cumulatively considerable, and impacts would be **less than significant**.

4.3.9 Hazards and Hazardous Materials

Although some hazardous materials releases can cover a large area and interact with other releases (e.g., atmospheric contamination, contamination of groundwater aquifers), incidents of hazardous materials contamination due to leaking underground storage tank sites or release at individual businesses are more typically confined to a limited area. These relatively limited areas of contamination typically do not interact in a cumulative manner with other sites of hazardous materials contamination. However, if construction would create a new site of contamination,

or contribute substantially to a hazardous condition in the LRDP area, it could be considered to contribute to a cumulative impact. Impacts related to emergency vehicle access and response are considered site specific and not cumulatively considerable.

CREATE A SIGNIFICANT HAZARD THROUGH THE ROUTINE TRANSPORT, USE, OR DISPOSAL OF HAZARDOUS MATERIALS

Construction and operation of development under the 2021 LRDP would involve the transport, use, and disposal of hazardous materials to and from the UC Santa Cruz campus. Cumulative projects and associated activities located within and outside the LRDP area would be required to comply with safety procedures mandated by applicable federal and state laws and regulations, and UC Santa Cruz programs and policies related hazardous materials. State, federal, and UC Santa Cruz regulate the transport, use, and disposal of hazardous materials. As a result, there is not a cumulatively considerable impact without the 2021 LRDP.

As discussed in Section 3.9, "Hazards and Hazardous Materials, activities that involve the use of hazardous materials within the LRDP area such as construction and operation would continue to comply with existing safety standards mandated by applicable federal and state laws, UC Santa Cruz programs and policies. Therefore, the 2021 LRDP would not result in significant public hazards as a result of hazardous materials use. While UC Santa Cruz would continue using varying amounts and types of hazardous materials in day-to-day activities and operations, these activities would be closely regulated by UC Santa Cruz EH&S which mandates continued compliance with federal and state regulations to minimize the potential for adverse health effects related to hazardous materials use. Cumulative projects within the City and County would be required to implement similar procedures by the Santa Cruz County EHS, the designated CUPA for the region. With continued regulatory compliance, the 2021 LRDP would not contribute to a significant hazards and hazardous materials impact within the cumulative context associated with the routine transport, use, or disposal of hazardous materials. Therefore, the 2021 LRDP would not be cumulatively considerable.

RELEASE OF HAZARDOUS MATERIALS FROM A SITE OF KNOWN OR POTENTIAL CONTAMINATION

Construction and operation of development under the 2021 LRDP would potentially expose residents and construction workers to contaminated soil, including on or near sites included on a list of locations known to contain hazardous materials compiled pursuant to Government Code Section 65962.5. Cumulative projects and associated activities located within and outside the LRDP area would be required to comply with applicable state laws and regulations that govern hazardous materials. As a result, there is not a cumulatively considerable impact without the 2021 LRDP.

As discussed in Section 3.9, "Hazards and Hazardous Materials, Santa Cruz County EHS approved the site closure report for Westside Research Park in 2004, and the site is considered closed. As of the writing of this EIR, UC Santa Cruz EH&S is in the process of updating the DTSC's records to reflect existing conditions at Westside Research Park, and based on current data, UC Santa Cruz anticipates that the PEA will conclude that there are no contaminated soils on site in areas that could be disturbed during construction. In addition, there are sites known to contain hazardous materials within 1 mile of the LRDP area (see Table 3.9-1). Activities involving the assessment, cleanup, and monitoring of these sites would continue regardless of approval of the 2021 LRDP. Due to the proximity of documented contamination sites, proximity of public roadways, and the potential for undocumented contaminated sites to occur in the LRDP area, there is potential for contamination to be encountered during construction of projects under the 2021 LRDP. With implementation of Mitigation Measure 3.9-2a, the potential for on-site contamination would be evaluated before site-specific investigation is initiated. Mitigation Measure 3.9-2b would confirm on-site soil conditions before development is commenced and any identified contamination would be appropriately remediated. Mitigation Measure 3.9-2c would establish a contingency plan that would describe the necessary actions that would be taken if evidence of contaminated soil or groundwater is encountered during construction, including cessation of work until the potential contamination is characterized and properly contained or remediated. Mitigation Measure 3.9-2d would minimize the potential for release of potentially hazardous construction materials during demolition by

requiring that asbestos-containing building materials, lead-based paint, and other hazardous substances in building components are identified, removed, packaged, and disposed of in accordance with applicable state laws and regulations. These impacts are all site-specific.

Cumulative projects within the City and County would be required to adhere to the applicable laws and regulations that govern USTs and pesticide use, as well as requirements applicable to disposal and cleanup of contaminants. The Santa Cruz County EHS, the designated CUPA for the region is responsible for implementing a unified hazardous materials regulatory program throughout Santa Cruz County. Compliance is verified through annual routine inspections of all regulated facilities and investigation of citizen-based complaints or inquiries regarding improper handling and/or disposal of hazardous materials or hazardous wastes.

With implementation of mitigation measures and continued regulatory compliance, the 2021 LRDP would not contribute to a significant hazards and hazardous materials impact within the cumulative context associated with the release of hazardous materials. Therefore, the 2021 LRDP would not result in a cumulatively considerable impact.

HANDLING OF HAZARDOUS OR ACUTELY HAZARDOUS MATERIALS WITHIN 0.25 MILES OF AN EXISTING SCHOOL

Hazardous materials would continue to be handled within 0.25 mile of an existing school as a result of 2021 LRDP implementation, and overall quantities of hazardous materials used within the LRDP area may increase in the future. UC Santa Cruz would continue to comply with applicable hazardous materials and disclosure requirements for the handling, use, storage, and disposal of hazardous materials. Cumulative projects would also be required to comply with applicable laws and regulations pertaining to hazardous wastes, and risks associated with hazardous emissions or materials to existing or proposed schools located within 0.25 mile of future development would be reduced through proper handling, disposal practices, and/or cleanup procedures. Further, hazardous materials in laboratories are typically handled in small quantities. The potential consequences of accidental releases would be limited to a single building and in most cases are limited to the individual laboratory where the spill occurred, and people outside the buildings would not be exposed. With continued regulatory compliance, the 2021 LRDP would not contribute to hazards and hazardous materials impact associated with hazardous emissions or handling of hazardous materials with 0.25 mile of a school. Therefore, the 2021 LRDP would not result in a cumulatively considerable impact.

IMPAIR IMPLEMENTATION OF, OR PHYSICALLY INTERFERE WITH, AND ADOPTED EMERGENCY RESPONSE PLAN OR EMERGENCY EVACUATION PLAN

Implementation of the 2021 LRDP would not interfere with adopted emergency response or evacuation plan but construction activities for projects under the 2021 LRDP could result in short-term, temporary impacts to street traffic because of roadway improvements and potential extension of construction activities into the right-of-way. UC Santa Cruz requires contractors to notify the designated UC representative at least two weeks prior to any proposed roadway closure. In addition, when paths, lanes, or roadways are blocked, UC Santa Cruz requires detour signs to be installed that clearly designate an alternate route. UC Santa Cruz office of Physical Planning, Development, and Operations requires that maintenance and project managers notify UCPD and SCFD of road closures and alternative routes. Further, implementation of Mitigation Measure 3.9-4 would require UC Santa Cruz to prepare and implement site-specific construction traffic management plans for any construction effort that would require work within existing roadways. Cumulative projects would also be required to comply the City of Santa Cruz Emergency Operations Plan and the County Operational Area Emergency Management Plan. With implementation of Mitigation Measure 3.9-4 continued compliance with UC Santa Cruz notification requirements, the 2021 LRDP would not contribute to hazards and hazardous materials impact associated with implementation of an adopted emergency response plan. Therefore, the 2021 LRDP would not result in a cumulatively considerable impact.

SUMMARY

In summary and for the reasons stated above, development under the 2021 LRDP would not result in a cumulatively considerable contribution to cumulative impacts related to hazardous materials, and the impacts would be **less than significant**.

4.3.10 Hydrology and Water Quality

The geographic context for the cumulative impact analysis concerning hydrology and water quality consists of all watersheds that originate on the main residential campus and the Westside Research Park; this includes Wilder Creek, Cave Gulch, Moore Creek, Moore Creek Western Tributary, Jordan Gulch, Arroyo Seco, High Street, Kalkar Quarry, and San Lorenzo River. For cumulative groundwater impacts, the study area includes the LRDP area and portions of the city of Santa Cruz between the LRDP area and the coastline. All projects located within and outside the LRDP area are subject to federal, state, and local standards pertaining to water quality.

VIOLATE ANY WASTE DISCHARGE REQUIREMENTS THAT WOULD SUBSTANTIALLY DEGRADE SURFACE OR GROUNDWATER QUALITY

Development under the 2021 LRDP would increase the volume of wastewater generated on campus by increasing both the UC Santa Cruz population and the number of campus buildings and facilities. In general, the types of activities and uses in the LRDP area would remain unchanged, and therefore the quality of wastewater that is discharged to the sanitary sewer system would remain unchanged. The use of hazardous materials on campus is projected to increase under the 2021 LRDP because of increase laboratory space and campus populations. However, the types of chemicals and biological agents used in the future would likely be similar to those used in existing laboratories on campus. Wastewater generated on the main residential campus and Westside Research Park is discharged to the City of Santa Cruz sewer system and is treated at the City's wastewater treatment plant. As part of ongoing sustainability efforts, UC Santa Cruz evaluates the potential for on-site water recycling on a project-by-project basis, as demonstrated by the on-site water recycling system included as part of Student Housing West, which is a planned-but-not operational project (see Chapter 5, "Cumulative Impacts" of the Student Housing West EIR). However, no campus-wide plan for water recycling is proposed. Wastewater generated by cumulative projects would also be subject to wastewater treatment. With continued compliance with City of Santa Cruz wastewater discharge standards, and UC Santa Cruz safety programs that regulate the handling, storage, and disposal of hazardous materials, the 2021 LRDP would not contribute to a cumulative hydrology and water quality impact associated with a violation of waste discharge requirements within the cumulative context. Therefore, the 2021 LRDP would not be cumulatively considerable.

WATER QUALITY IMPACTS RELATED TO CONSTRUCTION ACTIVITIES

Overall water quality in the region has degraded over time as natural habitat has been converted to urban uses, and these uses have resulted in runoff of various pollutants into local and regional waterways. A variety of programs have been implemented with the goal of halting degradation of water quality and reversing this trend. Several state and federal agencies are involved in these programs, many of which are required by or originate in the federal Clean Water Act. However, a cumulative adverse water quality condition exists.

Construction activities associated with implementation of the 2021 LRDP would expose bare soil to rainfall, which could accelerate erosion and result in sedimentation of stormwater and, eventually, waterbodies. Construction-related projects in the LRDP area would be required to comply with the State Water Resources Control Board 2009-0009-DWQ Construction General Permit (CGP). Compliance with the CGP requires a) development of a Storm Water Pollution Prevention Plan (SWPPP) for projects disturbing 1 acre or more, of b) preparation of an Erosion and Sediment Control Plan for projects less than 1 acre in accordance with the Campus Standards Handbook and the Storm Water Management Program to minimize erosion and sedimentation during construction. In addition, the

design and operation of each new facility would adhere to UC Santa Cruz Post-Construction Stormwater Management Requirements (UC Santa Cruz Post-Construction Requirements). This program exists to ensure compliance with Central Coast Regional Water Quality Control Board Resolution R3-2013-0032. applicable laws and implementation of BMPs on the ground during construction. Cumulative projects would also be required to comply with CGP and SWPPP requirements, in addition to applicable local water quality regulations. With continued compliance with regulatory requirements and the UC Santa Cruz Campus Standards Handbook, the 2021 LRDP would not contribute to a cumulative hydrology and water quality impact associated with water quality within the cumulative context. Therefore, the 2021 LRDP would not be cumulatively considerable.

ALTERATION OF DRAINAGE PATTERNS AND INCREASED RUNOFF

Development under the LRDP area could alter drainage patterns, and increase the rate or amount of surface runoff, which could result in substantial siltation or erosion on or off site, and increase the amount of urban pollutants in storm water runoff, which could affect water quality. The campus SWMP ensures that UC Santa Cruz is legally fulfilling the requirements of its Phase II General Permit for Small Municipal Separate Storm Sewer System (i.e., Non-Traditional MS4 permit). In addition to the SWMP, new campus developments must comply with the UC Santa Cruz Post-Construction Requirements to ensure that UC Santa Cruz is reducing pollutant discharges to the Maximum Extent Practicable and preventing stormwater discharges from causing or contributing to a violation of receiving water quality standards in all applicable development projects. UC Santa Cruz is also considering options for providing a more comprehensive, integrated, and consistent approach to more consistently determine site-specific runoff changes related to individual drainages, as well as cumulative watershed changes that will inform appropriate site design measures (if required) and in conformance with SWRCB Phase II NPDES requirements. Cumulative projects would also be required to comply with SWRCB Phase II NPDES requirements, in addition to applicable local water quality regulations. With continued compliance with regulatory requirements and UC Santa Cruz SWMP, the 2021 LRDP would not contribute to a cumulative hydrology and water quality impact associated with alternation of drainage patterns and increased runoff within the cumulative context. Therefore, the 2021 LRDP would not be cumulatively considerable.

FLOOD RELATED IMPACTS

Development under the 2021 LRDP could alter drainage patterns in the LRDP area and would increase the rate or amount of surface runoff, which could exceed the capacity of storm water drainage systems, resulting in flooding on or off site. UC Santa Cruz Post-Construction Requirements which require compliance with SWRCB Phase II NPDES requirements would manage peak flow rates and reduce sediment flow in the LRDP area. Potential surface runoff on the Westside Research Park would also be conveyed to the existing storm drainage system that serves the existing facility or retained on-site. In addition to UC Santa Cruz Post-Construction Requirements managing peak flow rates, karst features intercept most of the surface flow, even during extreme rainfall events. Cumulative projects would also be required to comply with SWRCB Phase II NPDES requirements, in addition to applicable local water quality regulations. With continued compliance with regulatory requirements and UC Santa Cruz Post-Construction Requirements, the 2021 LRDP would not contribute to a cumulative hydrology and water quality impact associated with flooding within the cumulative context. Therefore, the 2021 LRDP would not be cumulatively considerable.

IMPACTS TO KARST AQUIFER SUPPLY, RECHARGE, AND GROUNDWATER QUALITY

Potential impacts on groundwater under the 2021 LRDP could result from an increase in impervious surfaces, pressure grouting to densify and stabilize soft soils, and groundwater extraction. New impervious areas that would overlie the north campus groundwater system could impact the infiltration of rainfall which is a significant source of recharge of the shallow aquifer on the north campus. Although this shallow groundwater is not extracted as a water source on the campus, it supplies water to springs and seeps located throughout the north campus and in adjacent drainages such as Cave Gulch and Wilder Creek. Development under the 2021 LRDP could also affect the karst aquifer in the central/lower campus, that the combined effect of new impervious surfaces and pressure grouting to

stabilize soft soils could result in the reduction of groundwater levels, which in turn could potentially affect off-site spring flow. However, development in the LRDP area would be required to comply with UC Santa Cruz Post-Construction Requirements which require the on-site retention of stormwater equal to the volume of runoff generated by the 85th or 95th percentile 24-hour storm event; therefore, continued compliance prevent a reduction in flow to springs and recharge the karst aquifer. UC Santa Cruz is also considering options to more consistently evaluate and determine site-specific runoff changes, as well as cumulative watershed changes that will inform appropriate site design measures (if required) and in conformance with SWRCB Phase II NPDES requirements. Further, Implementation of Mitigation Measure 3.10-5a would require UC Santa Cruz to employ alternative building foundation designs in the event that pressure grouting practices have the potential to impact groundwater quality. Implementation of Mitigation Measure 3.10-5b, would require UC Santa Cruz to monitor water levels and define average base water levels to ensure that extraction does not contribute to a net deficit in aquifer volume within the cumulative context. Cumulative projects would also be required to comply with SWRCB Phase II NPDES requirements, in addition to applicable local water quality regulations. Accordingly, with continued compliance with UC Santa Cruz's Post-Construction Requirements, the 2021 LRDP would not contribute to a cumulative hydrology and water quality impact associated with impacts to karts aquifer supply, recharge, and groundwater quality within the cumulative context. Therefore, the 2021 LRDP would not be cumulatively considerable.

SUMMARY

In summary and with inclusion of appropriate mitigation measures (as noted above), development under the 2021 LRDP would not result in a cumulatively considerable to cumulative hydrology impacts and the cumulative impacts would be **less than significant**.

4.3.11 Land Use and Planning

The cumulative context for land use impacts of the 2021 LRDP include the existing and planned land uses surrounding the campus. UC Santa Cruz is the only agency with land use jurisdiction over campus projects, therefore, development occurring consistent with the 2021 LRDP would have no land use impacts within the LRDP area.

Table 4-2, Cumulative Projects List, describes planned or approved projects anticipated for both the City of Santa Cruz and UC Santa Cruz. Generally, the types of uses identified in Table 4-2 represent a continuation of existing land use types and/or redevelopment of similar land use types. With respect to the 2021 LRDP, all future development occurring in the LRDP area, consistent with the 2021 LRDP, would not conflict with adopted plans and policies set forth by UC Santa Cruz. Therefore, the development under the 2021 LRDP would not contribute to any cumulative impacts, and they would be **less than significant**.

4.3.12 Noise

Noise impacts typically occur locally because noise levels dissipate rapidly with increased distance from the source. When discussing increases in noise levels, a doubling of a noise source is necessary to result in a 3-dB (i.e., audible) increase. Thus, for cumulative noise impacts to occur, noise sources must combine to result in increases in noise at the same receptor that otherwise would not experience the increase attributed to the combined (or cumulative) condition.

CONSTRUCTION-GENERATED NOISE

Construction-related noise is typically considered a localized impact, affecting only receptors closest to construction activities. Construction of cumulative projects, including those proposed under the 2021 LRDP, occurring in close proximity to each other and at the same time, could contribute to cumulative noise impacts.

Implementation of individual projects proposed under the 2021 LRDP would necessitate construction activities near existing development, both on- and off-campus. Construction activities generally occur in phases and would be dispersed throughout the campus. However, construction activities could also occur adjacent to existing residential

land uses and could, depending on the equipment used and distance to nearby noise-sensitive land uses, exceed the acceptable daytime noise levels of existing on-campus and off-campus sensitive land uses. Implementation of Mitigation Measure 3.12-1 would limit the time periods during which construction activities in the vicinity of nearby noise-sensitive land uses would occur. Additionally, Mitigation Measure 3.12-1 would provide substantial reductions in levels of construction noise exposure at noise-sensitive receptors by requiring the use of properly maintained equipment, alternatively powered equipment, exhaust mufflers, engine shrouds, equipment enclosures, and temporary noise barriers (noise curtains typically can reduce noise by up to 10 dBA [EPA 1971]). Additionally, short-term lodging would be offered to residents if they would be temporarily exposed to nighttime (after 10PM) interior noise levels that exceed the interior noise standard of 45 L_{eq}. However, construction noise associated with some projects under the 2021 LRDP could still potentially exceed applicable noise standards. When combined with cumulative projects listed in Table 4-2 above, especially projects located within 0.25-mile of the LRDP area (e.g., Project Nos. 42, 48, and 50), concurrent construction activities may result in additional/combined construction noise that could disturb nearby receptors. As a result, development under the 2021 LRDP has the potential to contribute to cumulative noise impacts. Therefore, the 2021 LRDP would be cumulatively considerable.

CONSTRUCTION-GENERATED VIBRATION

Construction-related vibration is typically considered localized impacts, affecting only receptors closest to construction activities. Construction of cumulative projects, including those proposed under the 2021 LRDP, occurring in close proximity to each other and at the same time, vibration from individual construction projects could contribute to cumulative impacts related to noise and vibration.

Construction-related ground vibration is normally associated with impact equipment, such as pile drivers and jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. Blasting activities also generate relatively high levels of ground vibration and vibration noise. Construction activities under the 2021 LRDP would occur in proximity to existing on- and off-site sensitive receptors. Although the use of impact or sonic pile driving or blasting is not anticipated, construction within the LRDP area would exceed the significance threshold for building structural damage, human disturbance, and sensitive (i.e., laboratory) equipment. Consistent with Federal Transit Administration (FTA) guidelines for maximum-acceptable vibration criteria, implementation of Mitigation Measures 3.12-2a and 3.12-2b would require the contractor(s) to minimize vibration exposure at nearby receptors by locating equipment far from receptors and phasing operations. Cumulative projects would also be required to comply with FTA guidelines or similar adopted policies adopted to reduce impacts associated with construction generated ground vibration. Further, the projects listed in Table 4-2 that are located within 0.25 mile of the LRDP area generally involve additions to existing structures and would not typically require the types of construction (e.g., pile-driving) that can result in substantial and potentially cumulative vibration levels. Therefore, with implementation of mitigation measures, the 2021 LRDP would not contribute to a cumulative impact related to construction generated ground vibration within the cumulative context. Therefore, the 2021 LRDP would not be cumulatively considerable.

LONG-TERM STATIONARY NOISE

Implementation of the 2021 LRDP may result in increased noise levels as a result of new stationary noise sources and equipment (e.g., HVAC units, backup generators), and other new sources such as gathering spaces, loading docks, corporation yards, and parking lots. As discussed in Section 3.12, "Noise," on-campus gatherings are not anticipated to expose off-site receptors to noise levels that exceed City standards. Additionally, building mechanical equipment would not generate substantial operational noise levels and their design would be required to follow all UC building regulations. However, depending on the distance to noise-sensitive receptors, intervening shielding, and noise-reduction features incorporated into the loading dock or corporation yard design, noise-generating activity at these land uses could expose nearby noise-sensitive receptors to noise levels that exceed noise thresholds. Implementation of Mitigation Measures 3.12-3a and 3.12-3b minimize noise levels generated by loading docks, delivery activity, and corporation yard activity to levels that do not exceed daytime and nighttime standards. Cumulative projects would also be required to comply with noise standards to reduce operation noise levels. With implementation of mitigation measures, ambient noise levels associated with the operation of on-campus uses would be reduced to within

acceptable standards. Further, based on the distance between the LRDP area and nearby development, as well as the type of developments listed in Table 4-2, stationary source noise from these projects is not anticipated to combine or be considered in conjunction with stationary source noise associated with the 2021 LRDP. AS a result, the 2021 LRDP would not contribute to a cumulative noise impact (i.e., exceedance of applicable standards) related to long-term stationary noise within the cumulative context. Therefore, the 2021 LRDP would not be cumulatively considerable.

PERMANENT (TRAFFIC) NOISE LEVELS

Development associated with the 2021 LRDP would result in some increases in traffic volumes along affected roadway segments and potentially generate an increase in traffic source noise levels under cumulative conditions. As discussed in Section 3.12, "Noise," the County's incremental noise increase standards for sensitive receptors (i.e., 5 dB increase in traffic-related noise, where the post-project noise level would remain equal to or lower than 60 dB L_{dn}, and a 3 dB increase in traffic-related noise where the post-project noise level would exceed 60 dB L_{dn}) were used in the absence of other applicable transportation-specific noise standards.

To assess the cumulative traffic-noise impact, traffic noise levels associated with the 2021 LRDP under cumulative and cumulative-plus-project conditions were modeled for select roadway segments. See Appendix H for detailed modeling assumptions. Table 4-3 summarizes the increases in traffic noise on project-affected roadway segments.

Table 4-3 Predicted Increases in Traffic Noise Levels

Roadway[1]	Predicted dBA L_{dn}, 100 Feet from Centerline Existing	Predicted dBA L_{dn}, 100 Feet from Centerline Existing Plus Project	Predicted Change (dBA)	Applicable Incremental Noise Increase Standard (dBA)	Significant Increase?
Bay Street	62.1	63.0	0.9	3	No
Empire Grade	61.2	62.3	1.1	3	No
Glenn Coolidge Drive	60.7	61.9	1.2	3	No
Hagar Drive	62.7	63.5	0.8	3	No
Heller Drive	55.9	59.1	3.2	5	No
High Street[2]	62.4	63.4	1.0	3	No
SR 17	72.4	72.5	0.1	3	No
McLaughlin Drive	52.6	55.8	3.2	5	No
Mission Street/ Highway 1	65.2	65.4	0.2	3	No
Natural Bridges Drive	57.2	57.3	0.1	5	No
Western Drive	54.5	55.7	1.2	5	No

Notes: Traffic noise levels were calculated using methods consistent with the FHWA roadway noise prediction model, based on data obtained from the traffic analysis prepared for this project; dBA=A-weighted decibel; L_{dn} = Day-Night Noise Level.

[1] Based on results from the Regional Transportation Commission modeling, as summarized in Section 3.16, "Transportation," and provided in Appendix I, the segment with the largest ADT volume was modeled and displayed for each applicable roadway to ensure a conservative analysis.

[2] Predicted traffic noise levels modeled at 50 feet from centerline due to noise sensitive receptors being located closer than 100 feet from the roadway centerline.

Source: Modeled by Ascent Environmental, Inc, in 2020

As shown in Table 4-3, campus development under the 2021 LRDP would result in predicted increases in traffic noise levels ranging from approximately 0.1 to 3.2 dBA along affected area roadway segments. The incremental traffic noise increase standards for all roadways would not be exceeded. Therefore, implementation of the project would not result in a substantial increase (i.e., 5 dB increase where the post-project noise level would remain equal to or lower than 60 dB L_{dn}, and 3 dB where the post-project noise level would exceed 60 dB L_{dn}) in traffic noise. As a result, the contribution of the 2021 LRDP to cumulative roadway noise levels would not be considered substantial, and the 2021 LRDP would not be cumulatively considerable.

SUMMARY

In summary, the contribution of campus development under the 2021 LRDP to most cumulative noise impacts would not be cumulatively considerable. However, implementation of the 2021 LRDP would contribute substantially to cumulative construction noise. As a result, the impacts would be **significant and unavoidable**.

4.3.13 Population and Housing

As described in Section 3.13, "Population and Housing," implementation of the 2021 LRDP could create additional demand for housing in the community, including the city of Santa Cruz. However, as noted in Table 4-2 above, several planned-but-not-operational projects associated with the 2005 LRDP would provide additional on-campus student housing under cumulative conditions. More specifically, Kresge Housing, Student Housing West, and the Crown College Major Renovation Project would provide an additional 2,175 student beds within the LRDP area. As a result, under cumulative conditions, the projected increase in student housing demand that would occur with 2021 LRDP implementation would be accommodated on-campus and no additional off-site student housing demand would occur. This is an improved condition compared to the project-only impact analysis. Under existing conditions, 9,283 beds are provided for a total of 18,518 students. The project would provide 8,500 beds, a ratio of one bed for every student (above the 2005 LRDP capacity of 19,500 beds). The addition of 2,175 beds to the project total would increase the bed count by 10,675 above existing conditions. Under the 2021 LRDP, student capacity would be 28,000, which is 9,482 more than under existing conditions. Therefore, the project plus cumulative on-campus housing development would provide 1,193 more beds than additional students, lowering demand for housing in the community compared to existing conditions. Given the tight Santa Cruz housing market, this would be a beneficial effect from cumulative development on campus.

With regard to off-campus employee housing demand, it is conservatively assumed that the 2021 LRDP may result in an off-campus housing demand for 2,190 residential units within Santa Cruz County. This additional demand is anticipated to incrementally increase over the approximately 20-year planning period of the 2021 LRDP in proportion with 2021 LRDP implementation and increases in student enrollment and would not all occur at a single point in time. According to Department of Finance data, there are an estimated 106,135 total dwelling units in Santa Cruz County in 2020. Of that, 97,831 are occupied, resulting in 8,304 unoccupied dwelling units and a vacancy rate of 7.8 percent. This does not account for the 911 homes recently lost in the 2020 CZU Lightning Complex Fire. Further, based on a 2019 U.S. Housing and Urban Development analysis (prior to the fire), this vacancy rate does not appear to translate into truly available housing, and both the for-sale and rental housing markets are extremely tight. Refer to Section 3.13, "Population and Housing" for further clarification.

The demand for additional housing would likely contribute to the housing issues in the county. However, it is important to consider the discussion above with respect to 2021 LRDP plus cumulative on-campus housing development; a supply of 1,193 beds in the Santa Cruz housing market would be opened through the provision of on-campus housing. This does not necessarily translate into an equivalent availability of housing for employees; students tend to live in larger group settings (example: 4 students in a 2-bedroom apartment) than employees, who may have families or be in a position to afford less dense housing settings, but it does take pressure off the local housing market that would have occurred without these projects. On balance, additional demand for housing in the Santa Cruz housing market would be created by 2021 LRDP employees. While many of the cumulative projects identified in the analysis above could address increased demand associated with 2021 LRDP development, cumulative housing development would also help meet local housing needs. For these reasons, the contribution of campus growth under the 2021 LRDP would be expected to increase housing demand and would contribute considerably to cumulative population and housing impacts. The project's cumulative impacts would be **significant and unavoidable**.

4.3.14 Public Services

The cumulative context for public services includes the service areas of the various public service providers that provide fire, police, and library services to UC Santa Cruz. Under existing conditions, public services are provided in the LRDP plan area and surrounding areas by multiple agencies, including City of Santa Cruz Fire Department, the California Department of Forestry and Fire Protection, UC Santa Cruz Police Department, and City of Santa Cruz Police Department, as needed. School services are primarily provided by Santa Cruz City Schools District (SCCS). Cumulative development in the region continues to increase the concentration of persons and structures within these local public service jurisdictions and the demands for these services.

The increase in population under the 2021 LRDP could continue the trend of increasing the demand for public services and could combine with other proposed development projects within the city to result in a cumulative increase in demand for public services. Other development projects in the region would be required to pay impact fees consistent with local jurisdiction requirements, including the City of Santa Cruz, Santa Cruz County, and SCCS, to ensure the adequate provision of public services, including schools, in the future, thereby offsetting the contribution of each cumulative project. As noted in Section 3.14, "Public Services," it is not anticipated that new off-campus public service facilities would be required to serve campus growth and development under the 2021 LRDP. The City of Santa Cruz Fire Department has indicated that Station 4, located on-campus, is not equipped to accommodate the proposed increase in on-campus population. The existing station would need to be expanded, or a new station would need to be constructed to accommodate population growth under the 2021 LRDP. Implementation of Mitigation Measure 3.14-1 would require UC Santa Cruz to initiate the design and planning of a new on-campus fire station, in coordination with SCFD, if it is determined that proposed development under the 2021 LRDP would exceed the height of existing on-campus response vehicles of the existing fire station. Therefore, the project would not result in a cumulatively considerable contribution such that a significant cumulative public services impact would occur. No mitigation measures are necessary to reduce the 2021 LRDP's contribution to potential cumulative impacts related to public services. Therefore, the contribution of campus growth and development under the 2021 LRDP to cumulative impacts on public services would not be cumulatively considerable, and the cumulative impacts would be **less than significant**.

4.3.15 Recreation

The cumulative context for recreation impacts includes the City of Santa Cruz, Santa Cruz County, and UC Santa Cruz campus. Past and present development has resulted in an increase in demand for recreation resources and a subsequent dedication of parklands and open space consistent with state and local plans and policies. This has increased the number of developed parklands, trails, and recreation facilities, and the amount of preserved open space within the City, County, and UC Santa Cruz campus.

ON-CAMPUS RECREATION FACILITIES

The increase in campus population under the 2021 LRDP would increase demand for on-campus recreation facilities. Recreation facilities at UC Santa Cruz are maintained as needed to prevent deterioration based on the use levels. In accordance with UCOP Facilities Manual, the UC Santa Cruz construction and maintenance policy outlines procedures for preventative maintenance, general replacement and repair, electrical repairs, ventilation, plumbing, painting, and furniture/cabinetry work. The level of management and maintenance of on-campus recreation facilities would increase throughout the implementation of the 2021 LRDP to prevent the accelerated deterioration that could result from increased demand and usage. Further, the on-campus population under the 2021 LRDP would be served by 15 acres of developed recreation and athletic facilities, and 1,419 acres of open space land uses. This equates to approximately 40 acres per 1,000 persons. Although less than the existing parkland ratio, the new ratio would still exceed the Quimby Act parkland dedication standards which are used generally to determine the adequacy of parklands in California development. In addition, the construction of new recreational facilities under the 2021 LRDP would occur when warranted by increased demand and when financially feasible. Therefore, campus growth and development under the 2021 LRDP would not result in a cumulatively considerable contribution to on-campus recreation impact. The 2021 LRDP's contribution would not be cumulatively considerable.

OFF-CAMPUS RECREATION FACILITIES

With respect to off-campus demand for recreation facilities, further development of parklands and trails and preservation of open space would occur as planned development proceeds, consistent with the City of Santa Cruz Municipal Code Chapter 5.72 and Santa Cruz County Code Chapter 15.01. Therefore, the amount of parkland is expected to increase within the city and county over time consistent with their respective parkland dedication standards. In addition, new developments within the City and County would be required to pay fees to mitigate for increased park demands in accordance with the Quimby Act and locally adopted regulation to off-set maintenance and construction of recreation facilities in response to increases in population, thereby reducing the potential contribution of off-campus development to less than cumulatively considerable. Therefore, campus growth and development under the 2021 LRDP would not result in a cumulatively considerable contribution to off-campus recreation impact. The 2021 LRDP's contribution would not be cumulatively considerable.

SUMMARY

The 2021 LRDP would not represent a cumulatively considerable contribution to recreation impacts in the area, and impacts would be **less than significant**.

4.3.16 Transportation

VEHICLE MILES TRAVELED

As noted in Section 3.16, "Transportation," existing region-wide and project-generated VMT estimates were calculated using the SCC Travel Model. The model uses land use data and transportation network inputs, including highway, arterial, and transit systems, across the County to assign trips within the region's transportation network and estimates of daily person trips and associated VMT. The model also estimates the travel that occurs between Santa Cruz County and surrounding counties even though these areas are not included within the model's geographic boundary. The cumulative (year 2040) model also includes land use growth consistent with AMBAG based on adopted growth plans the municipalities within the county that are used to estimate future (i.e., cumulative) transportation conditions.

Cumulative VMT impacts are analyzed using the "boundary method." The boundary method evaluates VMT that occurs within a selected geographic boundary (e.g., campus, city, county or region) and is a measure of the project's effect on VMT. The selected regional boundary for this analysis includes Santa Cruz County. This captures all on-road vehicle travel on a roadway network for any purpose and includes local trips as well as trips that pass through the area without stopping. The VMT metrics presented in Chapter 3 illustrate VMT generated by the project.

An example of how a project can affect VMT is the addition of housing in a job-rich downtown. Workers in the downtown that has limited housing options must travel a greater distance between their home and work. Adding the housing in downtown will shorten many of the home-to-work trips and reduce the VMT to/from the downtown. While the new housing itself will "generate" more daily trips than existing uses, in that there will be more cars coming in and out of the housing develop, it will generally attract those trips *away* from other residential developments located farther away. If the boundary VMT in the area served by the new residential development were to be assessed, it is likely that the total amount of driving in that area will have decreased rather than increased. For UC Santa Cruz, increasing the ratio of on-campus housing should reduce VMT within the County, since a lower proportion of students and employees need to commute to the campus.

Cumulative impacts are analyzed according to whether a project would increase or decrease the forecasted regional VMT per capita under cumulative conditions (2040). The contribution of the 2021 LRDP would be cumulatively considerable, as it relates to cumulative VMT, if it meets the following criteria:

- Boundary method countywide VMT per capita increases with implementation of the 2021 LRDP under 2040 conditions.

Table 4-4 below presents the total regional VMT under cumulative conditions in 2040 and the calculated regional VMT per capita, based on the total VMT in Santa Cruz County divided by the total service population (student enrollment, residents, and employees). The table also presents the total VMT related to the 2021 LRDP and 2021 LRDP VMT per capita in 2040.

Table 4-4 Boundary Method Countywide Cumulative VMT Estimates for Santa Cruz County

Metric	Cumulative Conditions (2040)	Cumulative Conditions with 2021 LRDP
Vehicle Miles Traveled	5,750,000	5,830,105
Service Population	469,000	482,000
VMT per Capita[1]	12.3	12.1

[1] Per capita is defined by dividing total VMT by the sum of all employees, residents, and students.

Source: Data compiled and provided by Fehr & Peers 2020.

As shown in Table 4-4, the regional VMT per capita under 2040 cumulative conditions without the 2021 LRDP would be 12.3 VMT per capita. Under 2040 cumulative conditions with the 2021 LRDP the countywide boundary VMT per capita is estimated to be 12.1 miles, which would be less than the countywide VMT per capita without the 2021 LRDP. Accordingly, the 2021 LRDP would not result in a cumulatively considerable contribution to a significant cumulative VMT impact. One major consideration is the Student Housing West and Kresge Housing projects, which are cumulative projects that would provide student housing on campus. These projects serve to help reduce the need for students to travel off campus for housing, thereby further reducing per capita VMT in addition to the 2021 LRDP.

TRANSIT SERVICE AND FACILITIES, BICYCLE FACILITIES, AND PEDESTRIAN FACILITIES

Campus development identified in the 2021 LRDP would occur incrementally over time. Combined with other cumulative development in the area, the need for transit service and facilities, bicycle facilities, and pedestrian facilities is anticipated to increase. The 2021 LRDP supports access and enhancements to existing transit stops, which may include improved lighting, shelter or shade, benches or seating, which may encourage increase transit usage. In addition, the 2021 LRDP includes additional roadways that would increase the circulation network within the LRDP area, which would increase access to existing transit and other alternative transportation facilities. As a result, the 2021 LRDP would not result in conflicts with plans, programs, and policies related to transit, bicycle, and pedestrian facilities, and the impacts from implementation of the 2021 LRDP would be less than cumulatively considerable.

EMERGENCY ACCESS AND GEOMETRIC DESIGN HAZARDS

In general, adequate emergency access and impacts related to geometric design hazards are site-specific and not cumulative in nature. However, as noted in Section 3.16, "Transportation," the 2021 LRDP includes conceptual roadway network changes and has not progressed to the stage of developing detailed designs. Any roadway extensions and new streets would be required to comply with the UC Facilities Manual, which requires UC Santa Cruz to comply with the Title 24 California Building Standards Code, Parts 1-12, and all amendments. To the extent indicated in the UC Facilities Manual, UC Santa Cruz would also comply with state of the practice roadway design guidance such as the Caltrans Highway Design Manual and the California Manual on Uniform Traffic Control Devices. The improvements to the existing roadway network would be anticipated to improve potential emergency access routes within the campus and would be designed in accordance with applicable requirements so as to prevent geometric design hazards, related to turning movements, etc., to enhance overall network performance. As a result, the contribution of campus development under the 2021 LRDP would not be cumulatively considerable.

In summary, the contribution of campus growth and development to cumulative transportation impacts would not be cumulatively considerable, and the project's cumulative transportation impacts would be **less than significant**.

4.3.17 Utilities and Service Systems

The cumulative context for water treatment/distribution and wastewater collection/treatment impacts is the 2021 LRDP area and the service areas of local utility providers (i.e., the City). The cumulative context for water supply is the Santa Cruz Water Department (SCWD) service area. The cumulative context for solid waste is the City of Santa Cruz, and the cumulative context for utility infrastructure is the service area for each utility.

WATER SUPPLY AND INFRASTRUCTURE

As discussed in Section 3.17, "Utilities and Service Systems," implementation of the 2021 LRDP would result in an increase in demand for potable water due to on-campus population growth and additional landscaping and mechanical needs. The City of Santa Cruz's 2015 UWMP included water demands for UC Santa Cruz based on the university's previously estimated 2035 demand of 308 million gallons per year (MGY). The projected potable water demand associated with the development under the 2021 LRDP is approximately 289 MGY by 2040. The water demand of the campus under the 2021 LRDP (292 MGY) would be less than demand included in the 2015 UWMP, and there would generally be adequate water supply from the City's existing water sources in normal water years, with small shortfalls during normal and single dry years met through conservation. During multiple dry water year conditions, there would be a substantial gap in the service area between demand and available supply, up to 1,730 MGY. This gap would not be fully addressed through conservation and would require the City to secure a new water source. UC Santa Cruz's water demand under the 2021 LRDP would contribute to the need for the City to secure a new water supply source to address the shortfall under multiple dry water year conditions. Implementation of Mitigation Measure 3.17-1a would require UC Santa Cruz to implement drought emergency measures to reduce water consumption during a drought emergency. Mitigation Measure 3.17-1b would require UC Santa Cruz to consult with the City regarding the appropriate scope of and initiate, an engineering audit of campus water use, similar to the previous audit completed in 2007. However, the impact would remain significant and unavoidable. Therefore, the 2021 LRDP's contribution to cumulative water supply impacts would be cumulatively considerable.

With respect to water supply infrastructure and as noted in Section 3.17, "Utilities and Service Systems," the potential impacts associated with water supply infrastructure take into consideration the combined demand for potable water supplies within the LRDP area and City infrastructure that supplies both the LRDP area and land uses within the city. As a result, the analysis provided in Section 3.17 is inherently cumulative. As described, implementation of the 2021 LRDP would not result in inadequate capacity or the need for additional infrastructure that could result in new significant environmental impacts beyond those identified in this EIR. Therefore, the 2021 LRDP's contribution to water supply infrastructure would not be cumulatively considerable.

WASTEWATER TREATMENT

Under the 2021 LRDP, population increases would result in greater levels of wastewater flows from the campus and the Westside Research Park. The City of Santa Cruz wastewater treatment plant has the capacity to treat an average dry weather flow of 17 million gallons per day (mgd), and currently receives an average daily flow of less than 10 mgd. Under the 2021 LRDP, on-campus uses are projected to generate up to 0.57 mgd of wastewater, an increase of 0.20 mgd compared to existing conditions. Therefore, adequate capacity remains at the WWTP to accommodate projected flows from the campus as well as flows from other new development in the City. As part of ongoing sustainability efforts, UC Santa Cruz evaluates the potential for on-site water recycling on a project-by-project basis, as demonstrated by the on-site water recycling system included as part of Student Housing West, which is a planned-but-not operational project (see Chapter 5, "Cumulative Impacts" of the Student Housing West EIR). However, no campus-wide plan for water recycling is proposed. With respect to wastewater infrastructure (e.g., pipes) and as noted in Section 3.17, "Utilities and Service Systems," the potential impacts associated with wastewater infrastructure take into consideration the combined demand for wastewater pipeline capacity within the LRDP area and City infrastructure that supplies both the LRDP area and land uses within the city. As a result, the analysis provided in Section 3.17 is inherently cumulative. As described, implementation of the 2021 LRDP would not result in inadequate capacity or the

need for additional infrastructure that could result in new significant environmental impacts beyond those identified in this EIR. Therefore, the 2021 LRDP would not be cumulatively considerable.

SOLID WASTE

As discussed under Impact 3.17-4, the quantity of municipal solid waste generated at UC Santa Cruz would be expected to increase through 2040-2041. The UC Sustainable Practices Policy goals for solid waste include a reduction of 25 percent per capita from FY2015/16 levels by 2025, 50 percent per capita from FY2015/16 levels by 2030, and a diversion of 90 percent of municipal solid waste from the landfill. Meeting these goals would result in a reduction in the amount of municipal solid waste generated on-campus. Because quantities of landfilled municipal solid waste are projected to decrease through 2040-2041, and the City of Santa Cruz Resource Recovery Facility has an expected closure date of 2058 with a maximum permitted throughput of 535 tons per day, campus growth and development under the 2021 LRDP would not substantially affect landfill capacity such that additional waste disposal facilities would be required for this project or other development in the region. Therefore, the 2021 LRDP's contribution to solid waste impacts would not be cumulatively considerable.

ELECTRICITY, NATURAL GAS, AND TELECOMMUNICATION FACILITIES

PG&E provides both natural gas and electricity distribution infrastructure to customers in Santa Cruz County, including the UC Santa Cruz main residential campus and Westside Research Park. PG&E owns and operates overhead electric transmission and electric distribution facilities as well as gas transmission facilities within the proposed LRDP area. Implementation of the 2021 LRDP would increase energy usage as noted above. As implementation of the 2021 LRDP would occur over a multi-year period, the projected energy demands of UC Santa Cruz under the 2021 LRDP would be factored into PG&E's load forecasts now and in the future. Upon updating their load forecasts, PG&E may determine a need to provide additional distribution facilities within the campus to serve UC Santa Cruz. Similarly, telecommunication infrastructure upgrades to both the central facility and the distribution lines are expected over the lifetime of the 2021 LRDP for bandwidth, reliability, and flexibility. Construction of energy, natural gas, or telecommunication transmission and/or distribution lines would occur in conjunction with new development under the 2021 LRDP. General construction impacts anticipated to result from implementation of the 2021 LRDP, including the construction or undergrounding of electricity, natural gas, or telecommunication transmission and/or distribution lines, are comprehensively analyzed in this EIR (e.g., within 3.3, "Air Quality;" 3.4 "Archaeological, Historical, and Tribal Cultural Resources;" 3.5, "Biological Resources;" 3.10, "Hydrology and Water Quality;" 3.12, "Noise;" and 3.16, "Transportation"). Further, as required by law, all utility connections would be constructed in accordance with all applicable building codes and applicable standards to ensure an adequately sized and properly constructed transmission and conveyance system. With inclusion of relevant mitigation measures, the impacts associated with the potential construction of on-site transmission and/or electricity, natural gas, or telecommunication distribution lines would be reduced and incremental contributions associated with infrastructure improvements would be less than cumulatively considerable.

SUMMARY

In summary, the contribution of campus growth and development under the 2021 LRDP to cumulative impacts on most utility and service systems would not be cumulatively considerable. However, due to the potential lack of adequate water supplies under future drought conditions within the City, campus growth and development under the 2021 LRDP would make a cumulatively considerable contribution to the cumulative impact on water supply, and the impact would be **significant and unavoidable**, even with inclusion of the feasible mitigation measures identified in Section 3.17, "Utilities and Service Systems."

4.3.18 Wildfire

The cumulative context for wildfire includes the City of Santa Cruz, Santa Cruz County, and UC Santa Cruz campus. As discussed in Section 3.18, "Wildfire," development under the 2021 LRDP would be subject to the UC Santa Cruz Emergency Operations Plan (EOP).

COMPATIBILITY WITH ADOPTED EMERGENCY RESPONSE AND EVACUATION PLANS

Implementation of the 2021 LRDP could result in short-term, temporary impacts to emergency vehicle access and evacuation because of roadway improvements and potential extension of construction activities into the right-of-way. This could result in a reduction in the number of lanes or temporary closure of certain street segments. Implementation of Mitigation Measure 3.9-4 would require UC Santa Cruz to prepare and implement site-specific construction traffic management plans for any construction effort that would require work within existing roadways. Cumulative projects would also be required to comply the City of Santa Cruz Emergency Operations Plan and the County Operational Area Emergency Management Plan. Cumulative projects would also be required to comply the City of Santa Cruz Emergency Operations Plan and the County Operational Area Emergency Management Plan. With implementation of Mitigation Measure 3.9-4, the 2021 LRDP would not contribute to wildfire impact associated with implementation of an adopted emergency response plan. Therefore, the 2021 LRDP would not be cumulatively considerable.

WILDFIRE RISK ASSOCIATED WITH NEW DEVELOPMENT AND LAND USE PATTERNS

Implementation of the 2021 LRDP would place new development within the north campus, and along the margins of existing development on the central and lower campus. The UC Santa Cruz EOP outlines evacuation procedures for building emergencies and campus-wide emergencies, and the UC Santa Cruz OES also maintains an on-going schedule of inspections for all buildings to ensure that fire hazards are mitigated and also conducts plan reviews and inspections of building construction and renovation activities. However, by placing new development in close proximity to HFHSZ, implementation of the 2021 LRDP could contribute to a cumulative wildfire risk. However, implementation of Mitigation Measure 3.19-2 would require UC Santa Cruz to prepare and implement a campus-wide vegetation management plan which would adequately address any potential wildfire risk associated with new development and changes in land use as proposed under the 2021 LRDP. Cumulative projects would also be required to comply the City of Santa Cruz Emergency Operations Plan, City of Santa Cruz Local Hazard Mitigation Plan, City of Santa Cruz requirements for Wildland Urban Interface Areas, and the County Operational Area Emergency Management Plan. With implementation of Mitigation Measure 3.18-2, the 2021 LRDP would not contribute to wildfire impact associated with new development and land use patterns. Therefore, the 2021 LRDP would not be cumulatively considerable.

SUMMARY

The 2021 LRDP's contribution to cumulative impacts related increased risk of wildfire would not be cumulatively considerable, and impacts would be **less than significant**.