UCI

DRAFT

TIERED INITIAL STUDY &

MITIGATED NEGATIVE DECLARATION

Verano 8 Graduate Student Housing

&

UCI Long Range Development Plan Student Housing Amendment

July 2019

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1.2 Lead Agency Name and Address

University of California, Irvine
Office of Physical and Environmental Planning
4199 Campus Drive, Suite 380, Irvine, CA 92697-2325

1.3 Contact Person and Phone Number

Lindsey Hashimoto, Senior Planner
(949) 824-8692

1.4 Project Location

The University of California, Irvine (UCI) is located in the city of Irvine, Orange County, California approximately four miles inland from the Pacific Ocean (see Exhibit 1-1). The Verano 8 Graduate Student Housing Complex project site is located in UCI's East Campus near the Campus Drive and California Avenue intersection.

1.5 Custodian of the Administrative Record

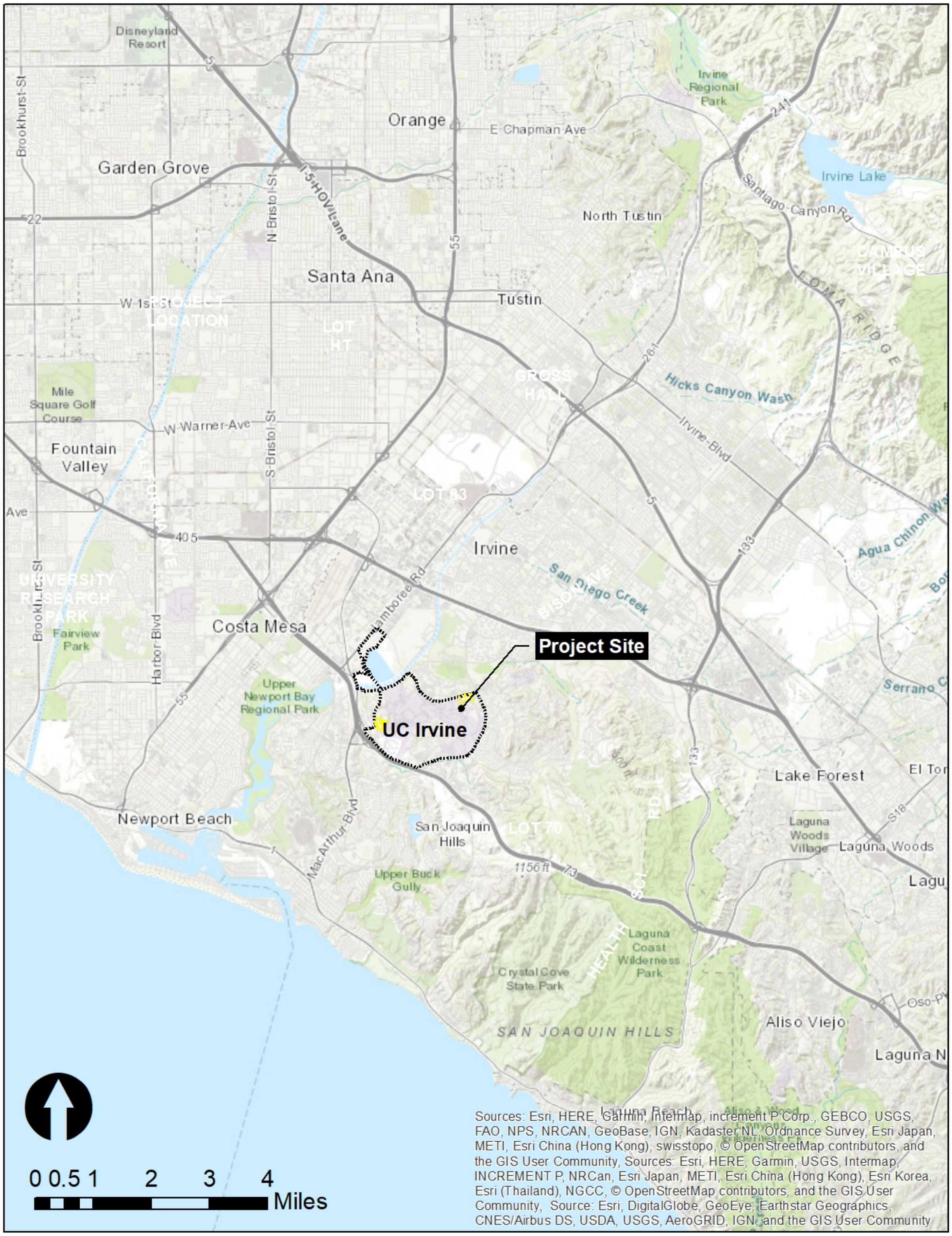
University of California, Irvine
Office of Physical and Environmental Planning
4199 Campus Drive, Suite 380, Irvine, CA 92697-2325

1.6 Documents Incorporated by Reference

The University of California, Irvine Long Range Development Plan (LRDP, UCI, 2007) is a comprehensive land use plan, based on projections through horizon year 2026, which guides campus growth. It provides policies and guidelines to support key academic and student life goals, identifies development objectives, delineates campus land uses, and estimates new building space needed to support program expansion.

The Long Range Development Plan Environmental Impact Report (LRDP EIR, PBS&J, 2007) analyzes potential environmental impacts associated with the implementation of the 2007 LRDP pursuant to California Environmental Quality Act (CEQA) Guidelines Sections 15152 and 15168. This document is used to tier subsequent environmental analyses, including this Initial Study/Mitigated Negative Declaration (IS/MND), for campus development.

Exhibit 1-1
Regional Location



2.0 PROJECT DESCRIPTION

2.1 Environmental Setting and Surrounding Land Uses

2.1.1 University of California, Irvine Campus

The 1,475-acre UCI campus is delineated into five planning sectors in the 2007 LRDP, the Academic Core, East Campus, West Campus, North Campus, and South Campus. These planning sectors are connected through physical linkages, such as pedestrian walkways, bicycle and trail systems, transit routes, and roadways (see Exhibit 2-1). The UCI Main Campus, consisting of the Academic Core, West Camus, South Campus, and East Campus, is surrounded by single-family residential and University High School to the east; commercial and multi-family residential uses in the University Town Center, University Drive, and the San Joaquin Marsh to the north; University Research Park and the State Route (SR) 73 to the west; and multi-family residential and institutional uses (Mariners Church, Tarbut V'Torah, Vista Verde Elementary School) to the south (see Exhibit 2-2).

2.1.2 Verano 8 Graduate Student Housing

The proposed 7.8-acre project site is located in the existing Verano Place graduate student housing complex in the East Campus. Surrounding uses include the Early Childhood Center, Infant Toddler Centers I and II, and California Avenue to the east; Adobe Circle and Puerta del Sol student housing to the north; previous Verano Place student housing phases and Adobe Circle to the south; and Verano Road and previous Verano Place student housing phases to the west. Existing on-site uses are a maintenance and operations facility and its associated Lot 27, which is primarily used for fleet parking and storage (see Exhibits 2-3 and 2-4).

2.2 Description of Project

2.2.1 Verano 8 Graduate Student Housing

The proposed project would demolish the existing approximately 6,000 GSF maintenance and operations facility and Lot 27 to construct approximately 1,200 graduate student beds in the existing Verano Place graduate student housing complex. The approximately 1,200 beds would be housed in approximately four apartment buildings along with an approximately 25,000 GSF community center for use by the residents. A separate approximately 1,000-space parking structure with an attached approximately 15,000 GSF replacement maintenance and operations facility would be constructed on the east side of the project site (see Exhibit 2-5). The residential buildings and parking structure would be approximately five-to-six stories designed and constructed primarily of concrete, brick, or stone masonry consistent with the architectural design guidelines in the UCI Physical Design Framework and surrounding residential buildings in the East Campus (see Exhibit 2-6).

As shown in Table 2-1, the four residential buildings with the attached community center and the maintenance and operations facility would total approximately 525,000 GSF.

Exhibit 2-1
2007 LRDP Campus Planning Sectors

Exhibit 2-2
UCI Campus and Adjacent Land Uses

Exhibit 2-3
Verano 8 Project Site and Adjacent Land Uses

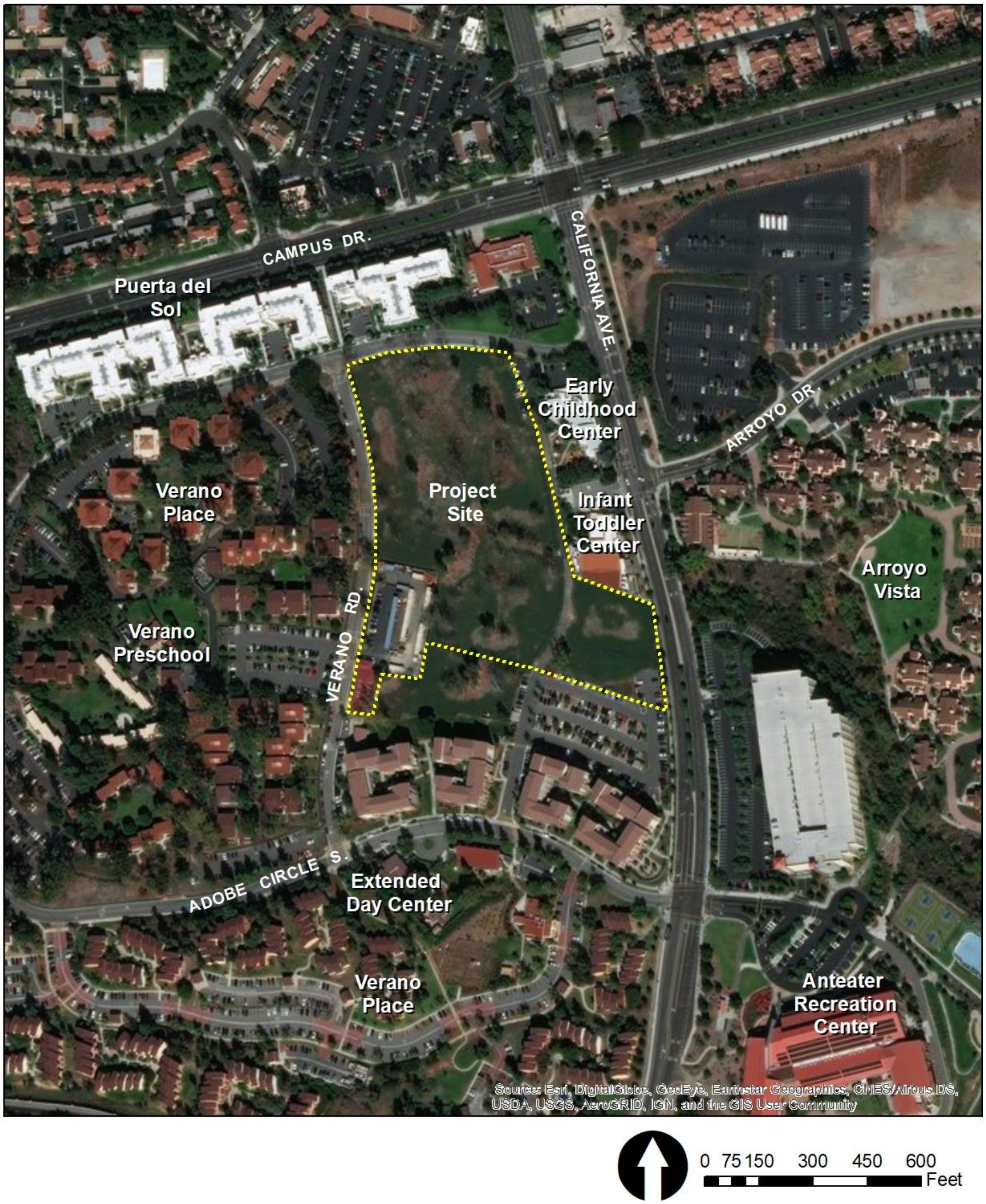


Exhibit 2-4
Existing Verano 8 Graduate Student Housing Project Views

View 1: Southern boundary of the project site looking south toward Verano Place student housing.

View 2: Eastern boundary of the project site looking northeast toward the Infant Toddler Center.

View 3: Northern boundary of the project site looking west toward Puerta del Sol student housing.

View 4: Western boundary of the project site looking east toward the project site and the East Campus Student Apartments Phase IV-A (Plaza Verde).

View 5: Western boundary of the project site looking northeast toward Lot 27 on the project site.

View 6: Southern boundary of the project site looking north toward the project site, Lot 27, Puerta del Sol, and East Campus Student Apartments phase IV-A (Plaza Verde).

Exhibit 2-5
Verano 8 Conceptual Site Plan

Exhibit 2-6
Verano 8 Conceptual Perspectives

Exhibit 2-6
Conceptual Perspectives (Continued)

Exhibit 2-6
Conceptual Perspectives (Continued)

Table 2-1
Verano 8 Graduate Student Housing Complex Space Breakdown (GSF)

Use	GSF
Graduate Student Housing	
1,200 Graduate Student Beds	485,000
Community Center	25,000
Maintenance and Operations Facility	15,000
Total:	550,000
1,000-space Parking Structure	375,000

Vehicular access to the project site would be through the proposed 1,000-space parking structure. Two entrances to the structure would be constructed, one at the eastside of the structure on California Avenue along with a right-in/right-out driveway, and a second entrance located on the southside of the structure within the existing surface parking lot south of the project site. The Lot 27 replacement parking for the maintenance and operations facility, approximately two fleet vehicles and 30 golf carts, would be relocated to the parking structure.

Pedestrian walkways would be constructed throughout the project site between the four residential structures to increase accessibility from the previous Verano Place phases, California Avenue, and the proposed parking structure. Other site improvements would include 24-hour lighting in the parking structure, ornamental landscaping, a courtyard, and other small open space areas placed intermittently between the apartment buildings for use by residents. Appropriate acoustical and visual buffers, as determined during the final design stages, would be utilized during project construction to minimize potential project-related aesthetic and/or noise impacts to existing sensitive receptors in the project vicinity.

Per Section A, Green Building Design, of the UC Sustainable Practices Policy, the proposed project would meet or exceed LEED Silver equivalency and California Green Building Standards Code (Cal Green). The project would incorporate measures resulting in significant energy savings, construction waste reduction, recycled material use, and water conservation. Such features would include an overall energy efficiency that exceeds California Title 24 criteria by at least 20 percent. To achieve this goal, the design-build team would evaluate and explore the following measures, including, but not limited to: photovoltaics, radiant floor heating and cooling, passive and active chilled beams, energy efficient lighting, living walls, rainwater collection, use of electricity for space and water heating, lifecycle analysis of building materials and systems, sustainable landscaping, high-performance glazing, insulation and radiant barrier, high reflectance roofing materials, energy control systems, efficient exhaust fans, and high efficiency air conditioning equipment where applicable. Construction and operation of the proposed project would increase the amount of greenhouse gas emissions generated and energy consumed by the campus. However, as discussed further in Sections 4.5, Energy, and 4.6, Greenhouse Gas Emissions, the project would not impede the campus' ability to reduce emissions as required by the UC Carbon Neutrality Initiative and Section A of the UC Sustainable Practices policy.

2.2.2 Project Phasing and Site Development

Project construction is anticipated to begin in spring of 2020 and would occur over 26 months with anticipated completion in July 2022 and occupancy in Fall 2022. Demolition and grading would occur during the first three months, and construction over the next 23 months.

Grading for the proposed improvements would require cut and fill to create the building pads. The proposed project is anticipated to have approximately 14,000 cubic yards (CY) of net cut from the site.

2.2.3 Access

Construction staging is proposed to occur within the project site and on the previously graded area immediately south. Additional remote staging may be needed at one of two existing staging sites, either the site located at the end of Arroyo Drive adjacent to the Vista del Campo student housing or the site located at the east corner of the Health Sciences Road and Bison Avenue intersection. Both sites have been previously used for construction staging and are graded, and no expansion of either site would occur. Haul routes during construction would be along Adobe Circle, Verano Road, California Avenue, Campus Drive, and Culver Drive. If remote staging is needed, additional haul routes could occur along Arroyo Drive, Anteater Drive, Peltason Drive, and Bison Avenue.

Operational vehicle access to the project site would occur via the proposed driveway on California Avenue leading into the proposed parking structure and from Adobe Circle through the existing surface parking lot to the south of the project site. On-site pedestrian access would be maintained through the installation of an on-site pedestrian network that would connect the residential buildings to the previous Verano Place phases, the proposed parking structure, and California Avenue and its existing Anteater Express bus stops.

2.2.4 Utilities

Initial analyses indicate that existing utility systems have adequate capacity to serve the project and are available in the vicinity of the site. The proposed project would receive water services from the Irvine Ranch Water District (IRWD). Potable water would be connected through an existing eight-inch line and sanitary sewer water through an existing eight-inch line both located on the project site. Recycled water for dual-flush plumbing and landscaping would require installation of a four-to-six-inch line that would connect to an existing line located in either California Avenue or East Peltason Drive. To provide on-site electricity, the structures would connect to an existing 12-kilovolt (kV) transformer located to the east of the project site. Telecommunications would connect to the campus' service through the installation of a new vault/pull box and four-inch conduits located to the east of the project site. If any existing connections conflict with the project design, alternative and/or temporary utilities would be provided to all adjacent structures during relocation.

The site currently drains into local storm drains and catch basins before flowing into an existing 84-inch storm drain located at the northeast corner of the project site. Depending on the final design phase, this storm drain may need to be relocated or bridged during construction. Storm drainage would be collected and treated on site through best management practices (BMPs), then conveyed to the existing 84-inch storm drain. Low impact development (LID) features, such as catch basins, may be implemented in compliance with UCI's MS4 permit to retain stormwater flows and would be determined during the final design phase.

2.2.5 Population

In order to operate the proposed Verano 8 project, it is anticipated approximately five new staff would be hired. The proposed housing would be for existing students and would not directly increase enrollment.

2.3 LRDP Student Housing Amendment and Consistency with the LRDP

The applicable land use plan is the 2007 LRDP and the University is the only agency with land use jurisdiction over projects located on the campus. The Verano 8 project site is designated as Student Housing in the LRDP, which allows housing and support uses. Furthermore, the up to 1,200 graduate beds proposed to be constructed is within the number of beds identified in the LRDP and analyzed in the LRDP EIR. Therefore, the proposed Verano 8 project is consistent with the 2007 LRDP.

In addition to the proposed Verano 8 project, housing demand forecasts have identified the need for additional on-campus student housing capacity to serve long-term demand. Factors contributing to this need include regional housing supply and affordability constraints, interest in additional on-campus housing to serve graduate students, and campus and community interest in sustainable development to limit impacts on the local housing market and transportation systems.

UCI is proposing to amend the 2007 LRDP to increase the on-campus student housing capacity to a total of 22,000 beds, which would accommodate 60 percent of on-campus enrollment anticipated in the 2007 LRDP. This would increase the LRDP student housing development program from 17,637 beds to 22,000 beds, an overall increase of 4,363 beds. With the completion of the two housing projects currently under construction on the campus, Middle Earth Expansion and the East Campus Student Apartments Phase IV-A, the campus will have 15,800 beds at the start of the Fall 2019 quarter (see Table 2-2). With the addition of the approximately 1,200 beds proposed in the Verano 8 project, the total number of student beds would be approximately 17,000 and, as discussed above, below the capacity in the 2007 LRDP and analyzed in the 2007 LRDP EIR.

Table 2-2
UCI Student Housing Capacity

Housing Program Beds	Fall 2019 Beds*	2007 LRDP Beds	Proposed LRDP Amendment Beds

Undergraduate	13,200	-	-
Graduate	2,600	-	-
Total	15,800	17,637	22,000
*Fall 2019 beds include Middle Earth Expansion and ECSA Phase IV-A			

The increase in the student housing program would be accommodated primarily through increasing the proposed development capacity of existing land areas already designated as Student Housing in the 2007 LRDP. This would include constructing new housing on existing land parcels and redevelopment of lower density housing with more land efficient product types. Proposed housing densities would increase to an average of 125-to-185 beds per acre from the existing LRDP density target of 90-to-125 beds per acre, specifically focused within the East Campus and at the Campus Village in the Academic Core.

In addition to the increase in the number of on-campus student housing beds, there are two proposed land use changes. The first would retain an existing six-acre parcel within the existing Campus Village student housing complex located in the Academic Core for future student housing redevelopment at a higher density rather than future redevelopment for Academic and Support uses as originally anticipated in the 2007 LRDP (see Exhibit 2-7, Marker 1). The second would change the land use of an undeveloped 12-acre parcel in the West Campus from Student Housing to Academic and Support (see Exhibit 2-7, Marker 2). As a result of land use efficiencies gained through higher density student housing targets throughout existing on-campus student housing communities, this 12-acre parcel is no longer needed to support student housing goals.

As no additional student housing projects are included in the analysis of this IS/MND beyond the Verano 8 project (which is within the existing 2007 LRDP student bed capacity previously analyzed in the 2007 LRDP EIR), this IS/MND reviews the proposed LRDP Amendment programmatically. Future projects that implement the LRDP Amendment would undergo additional project-level CEQA analysis during programming and planning.

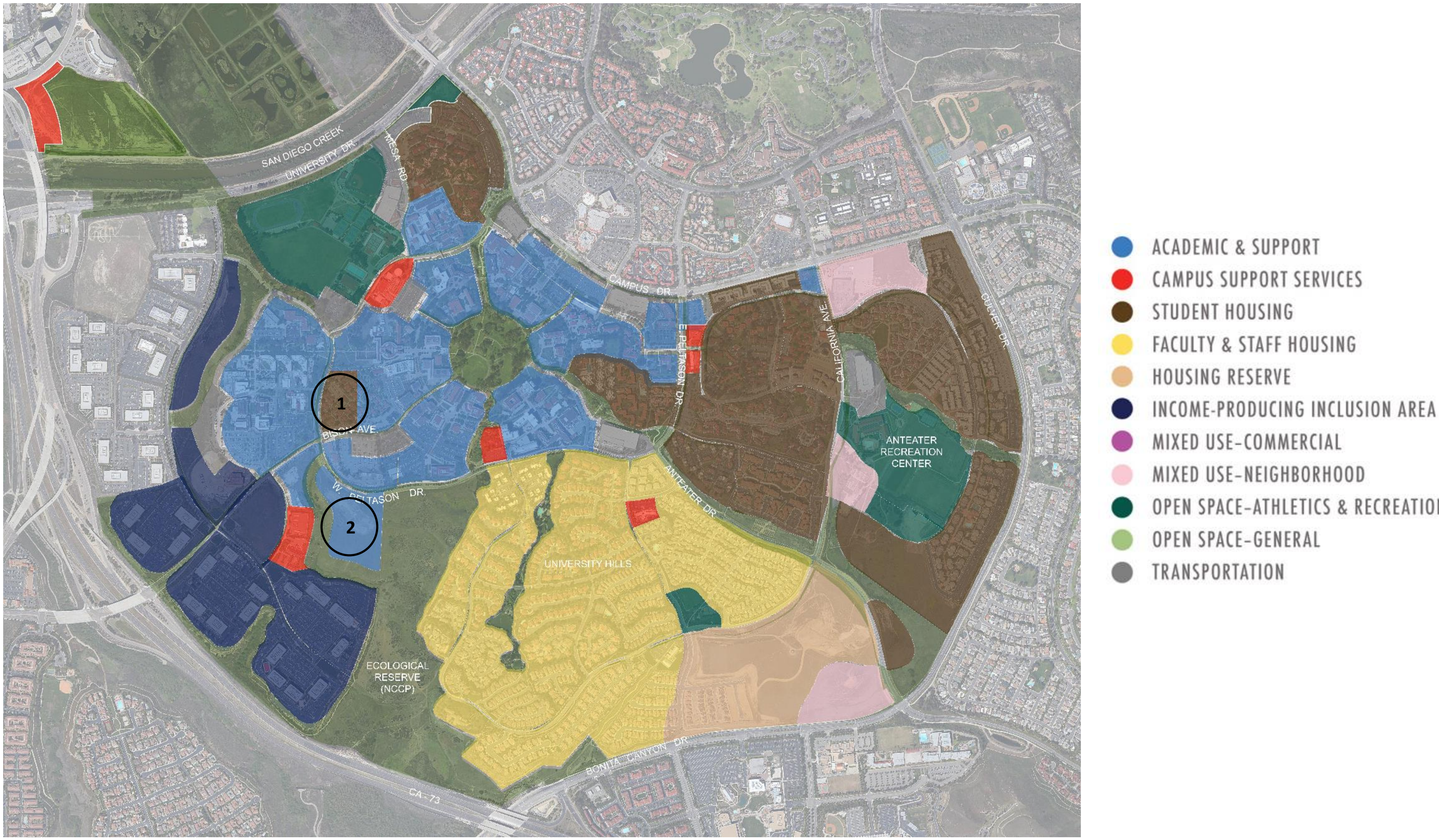
2.4 Discretionary Approval Authority and Other Public Agencies Whose Approval Is Required

<u>Lead Agency</u>

University of California

As a public agency principally responsible for approving or carrying out the proposed project, the University of California is the Lead Agency under CEQA and is responsible for reviewing and certifying the adequacy of the IS/MND and approving the project. The Board of Regents of the University of California (The Regents) will consider design and CEQA approval of the proposed Verano 8 project and LRDP Student Housing Amendment in Fall 2019.

Exhibit 2-7
Proposed LRDP Student Housing Amendment



3.0 DETERMINATION

On the basis of the initial study that follows:

	I find that the proposed project meets the criteria for the Section 15332 In-Fill Development Project Class 32 exemption and is CATEGORICALLY EXEMPT from the provisions of CEQA.
	I find that the proposed project WOULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
X	I find that although the proposed project could have a significant effect on the environment, the project impacts were adequately addressed in an earlier document or there will not be a significant effect in this case because revisions in the project have been made that will avoid or reduce any potential significant effects to a less than significant level. A MITIGATED NEGATIVE DECLARATION will be prepared.
	I find that the proposed project MAY have a significant effect on the environment. An ENVIRONMENTAL IMPACT REPORT will be prepared.

Signature

7.9.19

Date

Richard Demerjian

Printed Name

For

4.0 EVALUATION OF ENVIRONMENTAL IMPACTS

The University has defined the column headings in the Initial Study checklist as follows:

- **"Potentially Significant Impact"** is appropriate if there is substantial evidence that the project's effect may be significant. If there are one or more "Potentially Significant Impacts," a Project EIR will be prepared.
- **"Project Impact Adequately Addressed in LRDP EIR"** applies where the potential impacts of the proposed project were adequately addressed in the LRDP EIR and mitigation measures identified in the LRDP EIR will mitigate any impacts of the proposed project to the extent feasible. All applicable LRDP EIR mitigation measures are incorporated into the project as proposed. The impact analysis in this document summarizes and cross-references (including section/page numbers) the relevant analysis in the LRDP EIR.
- **"Less Than Significant with Project-level Mitigation Incorporated"** applies where the incorporation of project-specific mitigation measures will reduce an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." All project-level mitigation measures must be described, including a brief explanation of how the measures reduce the effect to a less than significant level.
- **"Less Than Significant Impact"** applies where the project will not result in any significant effects. The effects may or may not have been discussed in the LRDP EIR. The project impact is less than significant without the incorporation of LRDP or project-level mitigation.
- **"No Impact"** applies where a project would not result in any impact in the category or the category does not apply. Information is provided to show that the impact does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer may be based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project specific screening analysis).

4.1 Aesthetics

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:					
a) Have a substantial adverse effect on a scenic vista?					**X**
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?					**X**
c) Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?				**X**	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?		**X**			

Discussion

Aesthetics issues are discussed in Section 4.1 of the 2007 LRDP EIR.

a) Scenic Vista: No Impact

Verano 8 Graduate Student Housing

There are no identified scenic vistas surrounding the project Verano 8 site or elsewhere on the UCI campus (LRDP EIR, page 4.1-6). Furthermore, the project site is located in the East Campus, which has been previously developed with compatible uses consisting of student housing, parking facilities, and support uses. Therefore, the proposed project would not affect a scenic vista and no impact would occur. No mitigation is required.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, the six-acre parcel within the Academic Core from Academic and Support to Student Housing and the 12-acre parcel within the West Campus from Student Housing to Academic and Support.

There are no identified scenic vistas on the UCI campus (LRDP EIR, page 4.1-6). Furthermore, increasing student housing density within the Academic Core and East Campus and changing the land use of the six-acre parcel in the Academic Core from Academic and Support to Student Housing is consistent with surrounding uses, which are predominantly built-out with academic buildings, student housing, and support uses such as parking facilities. Changing the land use of the 12-acre parcel in the West Campus from Student Housing to Academic and Support is compatible with surrounding uses, which consists predominantly of campus support uses, such as Environmental Health & Safety, the electrical substation, Grounds Maintenance Facility, and Building Services. Therefore, implementation of the LRDP Amendment would not affect a scenic vista and no impact would occur. No mitigation is required.

b) Scenic Resources within a State Scenic Highway: No Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

The California Scenic Highway Mapping System indicates that there are no Officially Designated State Scenic Highways located within proximity to the campus.[1] The closest Eligible State Scenic Highway – Not Officially Designated, Pacific Coast Highway (PCH), is located more than two miles southwest and visibility of the UCI campus from PCH, due to both distance and elevation, is minimal to none. Therefore, the proposed project would not affect scenic resources within a state highway and no impact would occur. No mitigation is required.

c) Visual Character: Less than Significant Impact

[1] http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm. Accessed March 28, 2019.

Verano 8 Graduate Student Housing

The four residential buildings and parking structure would be approximately four-to-five stories constructed primarily of concrete, brick, or stone masonry consistent with the architectural guidelines in the UCI Physical Design Framework. Uses adjacent to the project site include multi-story student housing, the previous Verano Place phases and Puerta del Sol, that are constructed with similar materials as those proposed for the project. Additionally, the project site is located within the East Campus, which is developed primarily with student housing uses and support uses, such as the easterly adjacent Early Childhood Education Center and Infant/Toddler Centers I and II. No applicable regulations govern scenic quality of the viewshed surrounding the project area. Therefore, the proposed project would retain the visual character of the campus and surrounding uses and impacts would be less than significant. No mitigation is required.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, the six-acre parcel within the Academic Core from Academic and Support to Student Housing and the 12-acre parcel within the West Campus from Student Housing to Academic and Support. No applicable regulations govern scenic quality of the viewshed surrounding the campus.

The Academic Core is visible along Campus Drive. Adjacent off-campus uses are residential and commercial located within the University Town Center. Views from these land uses looking south towards the campus consist of academic buildings, student housing, and parking. This viewshed for off-campus users is completely developed with compatible land uses. Implementation of the LRDP Amendment, which would increase student housing in the Academic Core, would not result in a significant impact to the visual quality of the area.

The West Campus is bordered on its western side by State Route 73 (SR-73). The view from SR-73 is not considered to be sensitive as all UCI areas along the West Campus edge are developed and many of the eastward views are limited by topography or the SR-73. Future Academic and Support projects associated with the implementation of the LRDP Amendment in the West Campus would occur within the interior of the campus on the 12-acre parcel, outside the primary viewshed of off-campus areas. On-campus homes along the western edge of University Hills in the South Campus overlook the 12-acre West Campus parcel that would be developed as Academic and Support uses. However, future projects that implement the LRDP Amendment would be designed consistent with surrounding development and would follow campus planning and design guidelines.

To facilitate the development of East Campus student housing, UCI and the City of Irvine entered into Memorandums of Understanding (MOUs) in January 2002 and April 2017. The MOUs included design guidelines to limit potential visual impacts of East Campus student housing on neighboring off-campus communities. The design guidelines identified building setbacks, building height restrictions, and landscape buffers along the edge of the project site to ensure visual compatibility with adjacent residential areas in the City. Construction of the subsequent

East Campus projects proceeded in conformance with these MOU guidelines. The East Campus student housing projects occupy the majority of the eastern edge of the UCI campus and has been mostly developed except the southern area. Because most of this edge has been developed, the viewshed over the East Campus would not be significantly impacted by future development. Additionally, future East Campus projects within the viewshed of off-campus users would, at a minimum, be consistent with City of Irvine development standards to ensure design compatibility with the surrounding community.

Adjacent off-campus uses consist of single and multi-family homes in the communities of Turtle Rock and Turtle Ridge, which have westerly and northwesterly views of the East Campus student apartment buildings and the undeveloped East Campus area to the south. Views by these users of future on-campus buildings in the southern East Campus area would be masked by the existing landscape buffer on the eastside of Culver Drive, which would reduce visual, light, and glare impacts from future projects that implement the LRDP Amendment. Therefore, much of the viewshed of future development in the East Campus would be limited by the landscape buffers or would be obstructed by the existing development. Additional project-level CEQA analysis would occur during the planning phase for future projects that implement the LRDP Amendment.

Therefore, impacts to the visual quality or character of the viewshed at the Academic Core, West Campus, and East Campus from implementation of the LRDP Amendment would be less than significant. No mitigation is required.

d) Light or Glare: Project Impact Adequately Addressed in the LRDP EIR

Verano 8 Graduate Student Housing

The proposed project would include outdoor lighting to provide safe levels of illumination for pedestrians, bicyclists, and motorists, such as exterior building mounted fixtures and 24-hour parking lot lighting. Although areas adjacent to the project site have been previously developed, ambient lighting levels would increase with the installation of 24-hour lighting. However, the project site is located within a developed area of the East Campus where the increase in ambient lighting levels would be minimal. A lighting plan would be prepared during the design phase, as required by LRDP EIR mitigation measure Aes-2B, which would include a number of design features to reduce impacts from project light sources, such as standardized cutoff lighting fixtures and shielding to minimize light pollution. Furthermore, all building surfaces would be designed in accordance with LRDP EIR mitigation measure Aes-2A to reduce glare for passing motorists and pedestrians. Therefore, with implementation of LRDP EIR mitigation measures Aes-2A and Aes-2B, potential impacts due to the creation of light and glare would be reduced to a less than significant level.

LRDP Student Housing Amendment

Implementation of the LRDP Amendment would result in the development of new structures that would have the potential to increase sources of light and glare, specifically in the undeveloped areas, such as the southern area of the East Campus and the parcel in the West Campus. Potential new sources of light would include, but not limited to, exterior building illumination, lighting for parking lots, landscaped areas, and roadways. However, with the implementation of LRDP EIR mitigation measures Aes-2A and Aes-2B, which include design features to reduce impacts from light sources and reflective building surfaces, impacts from light and glare due to future projects that implement the LRDP Amendment would be reduced to a less than significant level.

Mitigation Measures

LRDP EIR Aes-2A: Prior to project design approval for future projects that implement the 2007 LRDP, UCI shall ensure that the projects include design features to minimize glare impacts. These design features shall include use of non-reflective exterior surfaces and low-reflectance glass (e.g., double or triple glazing glass, high technology glass, low-E glass, or equivalent materials with low reflectivity) on all project surfaces that could produce glare.

LRDP EIR Aes-2B: Prior to approval of construction documents for future projects that implement the 2007 LRDP, UCI shall approve an exterior lighting plan for each project. In accordance with UCI's Campus Standards and Design Criteria for outdoor lighting, the plan shall include, but not be limited to, the following design features:

- Full-cutoff lighting fixtures to direct lighting to the specific location intended for illumination (e.g., roads, walkways, or recreation fields) and to minimize stray light spillover into adjacent residential areas, sensitive biological habitat, and other light-sensitive receptors;
- Appropriate intensity of lighting to provide campus safety and security while minimizing light pollution and energy consumption; and
- Shielding direct lighting within parking areas, parking structures, or roadways away from adjacent residential areas, sensitive biological habitat, and other light-sensitive receptors through site configuration, grading, lighting design, or barriers such as earthen berms, walls, or landscaping.

4.2 Air Quality

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:					
a) Conflict with or obstruct implementation of the applicable air quality plan?					X
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?				X	
c) Expose sensitive receptors to substantial pollutant concentrations?				X	
d) Result in other emissions, such as those leading to odors affecting a substantial number of people?				X	

Discussion

Air quality issues are discussed in Section 4.2 of the 2007 LRDP EIR. A project-specific Air Quality Assessment was prepared by Kimley-Horn and Associates, Inc. and is included as Appendix A of this IS/MND.

a) Air Quality Management Plan Consistency: No Impact

As part of its enforcement responsibilities, the Environmental Protection Agency (EPA) requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the California Clean Air Act (CCAA) requires an air quality attainment plan to be prepared for areas designated as nonattainment regarding the federal and state ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

The Verano 8 project site is located within the South Coast Air Basin (SCAB), which is under South Coast Air Quality Management District's (SCAQMD) jurisdiction. The SCAQMD is required, pursuant to the Federal Clean Air Act (FCAA), to reduce emissions of criteria pollutants for which the SCAB is in nonattainment. To reduce such emissions, the SCAQMD drafted the 2016 Air Quality Management Plan (AQMP). The 2016 AQMP establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving State and Federal air quality standards. The 2016 AQMP is a regional and multi-agency effort including the SCAQMD, California Air Resources Board (CARB), Southern California Association of Governments (SCAG), and the EPA. The AQMP's pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including SCAG's 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts. SCAG's latest growth forecasts were defined in consultation with local governments and with reference to local general plans. The proposed project is subject to the SCAQMD's AQMP. Criteria for determining consistency with the AQMP are defined by the following indicators:

- **Consistency Criterion No. 1**: The project would not result in an increase in the frequency or severity of existing air quality violations, or cause or contribute to new violations, or delay the timely attainment of the AQMP's air quality standards or the interim emissions reductions.

- **Consistency Criterion No. 2**: The project would not exceed the AQMP's assumptions or increments based on the years of the project build-out phase.

Verano 8 Graduate Student Housing

According to the SCAQMD's CEQA Air Quality Handbook, the purpose of the consistency finding is to determine if a project is inconsistent with the assumptions and objectives of the regional air quality plans, and thus if it would interfere with the region's ability to comply with California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS).

The violations to which Consistency Criterion No. 1 refers are CAAQS and NAAQS. As shown in Table 4.2-1 and Table 4.2-2 below, the proposed Verano 8 project would not exceed the short-term construction standards or long-term operational standards and would therefore not violate any air quality standards. Therefore, no impact is expected, and the project would be consistent with the first criterion.

Concerning Consistency Criterion No. 2, the AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts, and SCAG's growth forecasts were defined in consultation with local governments and with reference to local general plans.

The proposed project is expected to bring 1,200 graduate student residents onto campus and reduce the number of students currently commuting to campus. The change would accommodate planned growth anticipated under the 2007 LRDP and would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by providing infill residential development on the campus and reducing the need to travel from off-site locations. The project would be consistent with the UCI Strategic Plan and City of Irvine General Plan. The growth of the total student body at UCI is already anticipated in the Irvine General Plan (and accordingly the projections within the AQMP). Additionally, it would not cause the SCAQMD's population or job growth projections used to develop the AQMP to be exceeded. The project also supports SCAG RTP/SCS and SCAQMD policies promoting infill development to reduce emissions. Therefore, a less than significant impact would occur, as the project is also consistent with the second criterion.

LRDP Student Housing Amendment

The LRDP EIR found less than significant impacts related to consistency with the AQMP. UCI is proposing to amend its existing 2007 LRDP to increase its on-campus student housing capacity to a total of 22,000 beds, which would accommodate 60 percent of the LRDP student enrollment. Changes in land use designations from student housing to academic support are proposed at two sites on the campus; the six-acre parcel in the Academic Core from Academic and Support to Student Housing and the 12-acre parcel in the West Campus from Student Housing to Academic and Support. The existing Campus Village in the Academic Core would ultimately be redeveloped at a higher density. Higher building densities across the campus would accommodate the LRDP Amendment's increased bed capacity and the 12-acre parcel in the West Campus is no longer needed for student housing. No changes to student enrollment or the Academic and Support square footage capacity that was previously analyzed in the 2007 LRDP EIR would occur. As with the Verano 8 Graduate Student Housing project, the LRDP Student Housing Amendment changes would accommodate anticipated planned growth and would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by providing infill residential development on the campus and reducing the need to travel from off-site locations. Therefore, no new impact relative to AQMP consistency or a substantial increase in the severity of a previously identified significant impact evaluated in the 2007 LRDP EIR would occur. No mitigation is required.

b) *Cumulatively Considerable Net Increase of Any Criteria Pollutants: Less Than Significant Impact*

Verano 8 Graduate Student Housing

Construction Emissions

Project construction activities would generate short-term emissions of criteria air pollutants. The criteria pollutants of primary concern within the project area include ozone-precursor pollutants (i.e. ROG and NO_x) and PM_{10} and $PM_{2.5}$. Construction-generated emissions are short term and temporary, lasting only while construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the SCAQMD's thresholds of significance.

Construction results in the temporary generation of emissions resulting from site grading, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment, especially on unpaved surfaces. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities, as well as weather conditions and the appropriate application of water.

The duration of construction activities associated with the project are estimated to last up to 26 months. The project is anticipated to require a net cut of approximately 14,000 cubic yards (CY) of soil. Construction-related emissions were calculated using CalEEMod, which is designed to model emissions for land use development projects, based on typical construction requirements. The project's predicted maximum daily construction-related emissions are summarized in Table 4.2-1, which shows that all criteria pollutant emissions would remain below their respective thresholds. While impacts would be considered less than significant, the project would be subject to compliance with SCAQMD Rules 402 and 403 (Fugitive Dust) to further reduce specific construction-related emissions.

Table 4.2-1
Construction-Related Emissions (Maximum Pounds Per Day)

Construction Year	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2020	4.64	51.01	35.26	0.11	10.11	6.32
2021	4.23	30.02	34.47	0.11	6.92	2.55
2022	64.84	27.47	33.17	0.11	6.77	2.40
SCAQMD Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed SCAQMD Threshold?	No	No	No	No	No	No
Notes: SCAQMD Rule 403 Fugitive Dust applied. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stock piles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SCAQMD CEQA Handbook (Tables XI-A through XI-E) were applied. No mitigation was applied to construction equipment. Refer to Appendix A for Model Data Outputs.						
Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.						

Operational Emissions

The project's operational emissions would be associated with motor vehicle use and area sources, such as the use of landscape maintenance equipment and architectural coatings. Long-term operational emissions attributable to the project are summarized in Table 4.2-2. Note that emissions rates differ from summer to winter because weather factors are dependent on the season and these factors affect pollutant mixing, dispersion, ozone formation, and other factors. As shown in Table 4.2-2, the project's operational emissions would not exceed SCAQMD thresholds for any criteria air pollutants. Therefore, the project's operational emissions would result in a less than significant long-term regional air quality impact.

Table 4.2-2
Verano 8 – Operational Emissions (Maximum Pounds Per Day)

Emission Source	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Summer Emissions						
Area	12.80	0.38	33.14	0.00	0.18	0.18
Energy	0.12	1.04	0.47	0.00	0.08	0.08
Mobile	1.95	6.6	16.64	0.05	4.71	1.29
Total	14.88	8.03	50.26	0.06	4.98	1.55
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	No	No	No	No	No	No
Winter Emissions						
Area	12.80	0.38	33.14	0.00	0.18	0.18
Energy	0.12	1.04	0.47	0.00	0.08	0.08
Mobile	1.92	6.67	16.68	0.05	4.71	1.29
Total	14.84	8.10	50.29	0.06	4.98	1.56
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	No	No	No	No	No	No
Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.						

Area Source Emissions. Area Source Emissions would be generated due to consumer products, architectural coating, and landscaping that were previously not present on the site. As shown in Table 4.2-2, the project's unmitigated area source emissions would not exceed SCAQMD thresholds for either the winter or summer seasons. Therefore, mitigation measures are not required, and a less than significant impact is anticipated.

Energy Source Emissions. Energy source emissions would be generated due to the project's electricity and natural gas usage. The project's primary uses of electricity and natural gas would be for space heating and cooling, water heating, ventilation, lighting, appliances, and electronics. As shown in Table 4.2-2, the project's unmitigated energy source emissions would not exceed SCAQMD thresholds for criteria pollutants. As such, the project would not violate any air quality standards or contribute substantially to an existing or projected air quality violation. Therefore, the project's operational air quality impacts would be less than significant.

Mobile Source Emissions. Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_X, PM_{10}, and

$PM_{2.5}$ are all pollutants of regional concern. NO_X and ROG react with sunlight to form O_3, known as photochemical smog. Additionally, wind currents readily transport PM_{10} and $PM_{2.5}$. However, CO tends to be a localized pollutant, dispersing rapidly at the source.

Project-generated vehicle emissions were estimated using CalEEMod, as recommended by the SCAQMD. The project's trip generation estimates were based on trip generation rates for graduate student housing from the UCI Verano 8 Student Housing Project and LRDP Housing Amendment Traffic Study. The project would generate approximately 1,800 average daily trips (ADT). As shown in Table 4.2-2, mobile source emissions would not exceed SCAQMD thresholds for criteria pollutants. Therefore, impacts associated with mobile source emissions would be less than significant.

Cumulative Emissions

<u>Cumulative Construction Emissions</u>. The SCAB is designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$ for State standards and nonattainment for O_3 and $PM_{2.5}$ for Federal standards. As discussed above, the project's construction-related emissions by themselves would not exceed the SCAQMD significance thresholds for criteria pollutants.

Since these thresholds indicate whether individual project emissions have the potential to affect cumulative regional air quality, it can be expected that the project-related construction emissions would not be cumulatively considerable. The SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the AQMP pursuant to the federal Clean Air Act mandates. The analysis assumed fugitive dust controls would be utilized during construction, including frequent water applications. SCAQMD rules, mandates, and compliance with adopted AQMP emissions control measures would also be imposed on construction projects throughout the SCAB, which would include related cumulative projects. As concluded above, the project's construction-related impacts would be less than significant. Compliance with SCAQMD rules and regulations would further minimize the project's construction-related emissions. Therefore, project-related construction emissions, in combination with those from other projects in the area, would not substantially deteriorate the local air quality. The project's construction-related emissions would not result in a cumulatively considerable contribution to significant cumulative air quality impacts.

<u>Cumulative Operational Impacts</u>. The SCAQMD has not established separate significance thresholds for cumulative operational emissions. The nature of air emissions is largely a cumulative impact. As a result, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, individual project emissions contribute to existing cumulatively significant adverse air quality impacts. The SCAQMD developed the operational thresholds of significance based on the level above which individual project emissions would result in a cumulatively considerable contribution to the SCAB's existing air quality conditions. Therefore, a project that exceeds the SCAQMD operational thresholds would also be a cumulatively considerable contribution to a significant cumulative impact.

As shown in Table 4.2-2, the project's operational emissions would not exceed SCAQMD thresholds. As a result, the project's operational emissions would not result in cumulatively considerable contribution to significant cumulative air quality impacts. Adherence to SCAQMD rules and regulations would alleviate potential impacts related to cumulative conditions on a project-by-project basis. Project operations would not contribute cumulatively considerable net increase of nonattainment criteria pollutants.

LRDP Student Housing Amendment

Construction and Operational Impacts. The LRDP EIR anticipated future development within the campus and predicted maximum air quality impacts based on worst-case assumptions. The LRDP EIR determined that worst-case construction scenario and operational emissions from future projects associated with implementation of the 2007 LRDP would exceed SCAQMD significance thresholds for CO, VOCs, NO_X, PM_{10}, and $PM_{2.5}$. However, individual construction projects may or may not result in significant impacts, depending on the project size and features.

The main source of air pollutant emissions during operations is from motor vehicles. Based on the UCI Verano 8 Student Housing Project and LRDP Housing Amendment Traffic Study (Stantec, June 2019), the LRDP Student Housing Amendment would generate 4,951 daily vehicle trips. Operational emissions associated with the LDRP Student Housing Amendment are summarized in Table 4.2-3, which shows that operational emissions would not exceed SCAQMD thresholds.

Table 4.2-3
LRDP Student Housing Amendment – Operational Emissions
(Maximum Pounds Per Day)

Emission Source	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Summer Emissions						
Area	45.26	1.80	155.68	0.01	0.86	0.86
Energy	0.54	4.59	1.96	0.03	0.37	0.37
Mobile	5.59	19.41	51.77	0.18	15.50	4.23
Total	51.39	25.80	209.40	0.21	16.73	5.46
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	No	No	No	No	No	No
Winter Emissions						
Area	45.26	1.80	155.68	0.01	0.86	0.86
Energy	0.54	4.59	1.96	0.03	0.37	0.37
Mobile	5.50	19.67	51.34	0.17	15.50	4.23
Total	51.30	26.06	208.98	0.21	16.73	5.47
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	No	No	No	No	No	No
Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.						

As noted above, although the LRDP Amendment would increase the overall student housing capacity, no changes to student enrollment or the Academic and Support square footage capacity would occur. The LRDP Student Housing Amendment changes would provide infill residential development on the campus and reduce the need to travel from off-site locations, thereby reducing associated mobile source emissions.

LRDP EIR determined that operational emissions from future projects would exceed SCAQMD significance thresholds and that emissions would be significant and unavoidable despite the implementation of mitigation. Operational mitigation measures in the LRDP EIR include requiring UCI to continue implementing its alternative transportation program, complying with SCAQMD Rules, and minimizing area source emissions (e.g., cooling and heating systems, landscaping, consumer products, etc.). Table 4.2-3 shows that emissions associated with the LRDP Amendment would be less than significant. Additionally, the LRDP Amendment operational emissions represent a small proportion of what was anticipated in the LRDP EIR and would not change the severity of impacts or require new mitigation measures. Therefore, no new impacts or a substantial increase in the severity of previously identified significant impacts evaluated in the Final EIR would occur.

<u>Cumulative Construction and Operational Impacts</u>. The LRDP EIR determined that since construction and operational emissions would exceed SCAQMD thresholds, the impacts would also result in a cumulatively considerable air quality impact. As noted above, although the LRDP Amendment would increase the overall student housing capacity, no changes to student enrollment or the Academic and Support square footage capacity would occur. The LRDP Amendment changes would provide infill residential development on the campus and reduce the need to travel from off-site locations, thereby reducing associated mobile source emissions.

As discussed above, SCAQMD rules, mandates, and compliance with adopted AQMP emissions control measures would also be imposed on construction projects throughout the SCAB, which would include related cumulative projects. Additionally, as shown in Table 4.2-3, the LRDP Amendment operational emissions would not exceed SCAQMD thresholds. As a result, emissions associated with the LRDP Amendment would not result in cumulatively considerable contribution to significant cumulative air quality impacts. No new impact relative to cumulative impacts or a substantial increase in the severity of a previously identified significant impact evaluated in the LRDP EIR would occur. No mitigation is required.

c) Sensitive Receptors: Less Than Significant Impact

<u>*Verano 8 Graduate Student Housing*</u>

Localized Construction Significance Analysis

The nearest sensitive receptors to the Project site are the UCI Infant Toddler Center approximately 50 feet (16 meters) to the east and additional campus housing adjacent to the project property line, located approximately 70 feet (21 meters) to the north, south, and west. To identify impacts to sensitive receptors, the SCAQMD recommends addressing localized significance thresholds (LSTs) for construction. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the Final Localized Significance Threshold Methodology (dated June 2003, revised in 2008) for guidance. The LST methodology assists lead agencies in analyzing localized impacts from Project-specific emissions.

Since CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, Table 4.2-4 is used to determine the maximum daily disturbed acreage for comparison to LSTs. The appropriate source receptor area (SRA) for the localized significance thresholds is the Central Orange County Coastal area (SRA 20) since this area includes the project site. LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects that disturb areas less than or equal to 5 acres. Project construction is anticipated to disturb a maximum of 3.5 acre in a single day.

Table 4.2-4
Equipment-Specific Grading Rates

Construction Phase	**Equipment Type**	**Equipment Quantity**	**Acres Graded per 8-Hour Day**	**Operating Hours per Day**	**Acres Graded per Day**
Grading	Tractors	3	0.5	8	1.5
	Graders	1	0.5	8	0.5
	Dozers	1	0.5	8	0.5
	Scrapers	1	1.0	8	1.0
Total Acres Graded per Day					3.5
Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.					

The SCAQMD's methodology states that "off-site mobile emissions from the project should not be included in the emissions compared to LSTs." Therefore, for the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered. The nearest sensitive receptors to the project site are the UCI educational facilities located approximately 30 feet (9 meters) to the north. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. Therefore, as recommended by the SCAQMD, LSTs for receptors located at 25 meters were utilized in this analysis for receptors closer than 25 meters. Table 4.2-5 presents the results of localized emissions during project construction.

Table 4.2-5
Localized Significance of Construction Emissions (Maximum Pounds Per Day)

Construction Activity	**Nitrogen Oxide (NO_X)**	**Carbon Monoxide (CO)**	**Coarse Particulate Matter (PM_{10})**	**Fine Particulate Matter ($PM_{2.5}$)**
2020 Demolition	33.20	21.75	1.73	1.55
2020 Site Preparation	42.42	21.51	9.92	6.27

Construction Activity	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2020 Grading	38.14	23.51	4.44	3.02
2020 Building Construction	19.19	16.85	1.12	1.05
2021 Building Construction	17.43	16.58	0.96	0.90
2022 Building Construction	15.62	16.36	0.81	0.76
2022 Paving	11.12	14.58	0.57	0.52
2022 Architectural Coating	1.41	1.81	0.08	0.08
SCAQMD Localized Screening Threshold (3.5 acres at 25 meters)	*164*	*1,328*	*11*	*7*
Exceed SCAQMD Threshold?	No	No	No	No
Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.				

Table 4.2-5 shows that the emissions of these pollutants on the peak day of project construction would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, the project would result in a less than significant impact concerning LSTs during construction activities.

Localized Operational Significance Analysis

LSTs for receptors located at 25 meters for SRA 20 were utilized in this analysis. As the Project site is 7.8 acres, the 5-acre LST threshold was conservatively used. The 5-acre LST is conservative as the thresholds increase with project size. The on-site operational emissions are compared to the LST thresholds in Table 4.2-6, which shows that the maximum daily emissions of on-site pollutants during project operations would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, the project would result in a less than significant impact concerning LSTs during operational activities.

Table 4.2-6
Localized Significance of Operational Emissions (Maximum Pounds Per Day)

Emissions Sources	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Area	0.38	33.14	0.18	0.18
SCAQMD Localized Screening Threshold (adjusted for 5 acres at 25 meters)	*197*	*1,711*	*4*	*2*
Exceed SCAQMD Threshold?	No	No	No	No
Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.				

Criteria Pollutant Health Impacts

Project emissions would be less than significant and would not exceed SCAQMD thresholds. Localized effects of on-site project emissions on nearby receptors were also found to be less than significant. The LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard. The LSTs were developed by the SCAQMD based on the ambient concentrations of that pollutant for each SRA and distance to the nearest sensitive receptor. Ambient air quality standards establish levels of air quality necessary, with an adequate margin of safety, to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Project-related emissions would not exceed the regional thresholds or the LSTs, and therefore would not exceed the ambient air quality standards or cause an increase in the frequency or severity of existing violations of those standards. Therefore, sensitive receptors would not be exposed to criteria pollutant levels exceeding ambient air quality standards.

Carbon Monoxide Hotspots

Intersection Hotspots. An analysis of CO "hot spots" is needed to determine whether the change in the level of service of an intersection due to the Project would result in exceedances of the CAAQS or NAAQS. Typically CO exceedances are caused by vehicular emissions, primarily when vehicles are idling at intersections. Vehicle emissions standards have become increasingly stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars. With turnover of older vehicles, cleaner fuels, and control technology on industrial facilities, CO concentrations have steadily declined.

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard. The SCAB was re-designated as attainment in 2007 and is no longer addressed in the SCAQMD's AQMP. The 2003 AQMP is the most recent version that addresses CO concentrations. As part of the SCAQMD CO Hotspot Analysis, the Wilshire Boulevard and Veteran Avenue intersection, one of the most congested intersections in Southern California with approximately 100,000 ADT, was modeled for CO concentrations. This effort identified a CO concentration high of 4.6 ppm, well below the 35-ppm Federal standard. The Project would not produce traffic volumes to generate a CO hot spot in the context of SCAQMD's CO Hotspot Analysis. Since CO hotspots were not experienced at the Wilshire Boulevard and Veteran Avenue intersection accommodating 100,000 ADT, it can be reasonably inferred that CO hotspots would not be experienced at any intersections in the Project vicinity resulting from the approximately 1,800 ADT attributable to the project. Therefore, impacts would be less than significant.

Parking Structure Hotspots. CO concentrations are a function of vehicle idling time, meteorological conditions, and traffic flow. Parking structures may cause concern regarding CO hotspots, as they may be enclosed and have frequent vehicle operations in cold start mode. Open parking structures above ground would be naturally ventilated, preventing CO hotspots. Approximately 1,000 parking spaces would be constructed within the parking garage. If the proposed parking structure is designed to be enclosed, it would be required to comply with ventilation requirements of the International Mechanical Code (Section 404 [Enclosed Parking Garages]), which requires mechanical ventilation systems for enclosed parking garages to operate automatically by means of CO and NO_2 detectors. Section 404.2 requires a minimum air flow rate of 0.05 cubic feet per second per square foot (cfs/sf) and the system shall be capable of producing a ventilation airflow rate of 0.75 cfs/sf of floor area. Impacts regarding parking structure CO hotspots would be less than significant.

Construction-Related Diesel Particulate Matter

Project construction would generate diesel particulate matter (DPM) emissions from the use of off-road diesel equipment required. The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e. potential exposure to TAC emission levels that exceed applicable standards). Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer.

The use of diesel-powered construction equipment would be temporary and episodic. The duration of exposure would be short and exhaust from construction equipment would dissipate rapidly. Current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 30, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. The closest sensitive receptors to the project site are located approximately 30 feet from the project limits, and further from the major project construction areas.

California Office of Environmental Health Hazard Assessment has not identified short-term health effects from DPM. Construction is temporary and would be transient throughout the site (i.e. move from location to location) and would not generate emissions in a fixed location for extended periods of time. Construction activities would be subject to and would comply with California regulations limiting the idling of heavy-duty construction equipment to no more than five minutes to further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions. For these reasons, DPM generated by project construction activities, in and of itself, would not expose sensitive receptors to substantial amounts of air toxics and the project would result in a less than significant impact.

<u>LRDP Student Housing Amendment</u>

The LRDP EIR found that implementation of the 2007 LRDP would not expose sensitive receptors to carcinogenic, non-carcinogenic, and localized CO pollutant concentrations in excess of regulatory standards. The LRDP EIR anticipated development throughout the UCI campus. As discussed above, construction emissions associated with the LRDP Student Housing Amendment would not result in construction emissions that would be substantially different than what was analyzed in the LRDP EIR.

The LRDP Amendment would increase the overall student housing capacity on the campus from 50 to 60 percent of student enrollment. However, no changes to student enrollment or the Academic and Support square footage capacity that was previously analyzed in the 2007 LRDP EIR would occur. The incremental future development of additional student housing would not expose sensitive receptors to substantial pollutant concentrations. Operations of student housing does not involve heavy-duty truck trips or other equipment that would generate pollutants. As the project would locate more students on campus, it would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by essentially providing infill residential development on the campus and reducing the need to travel from off-site locations. Therefore, no new impact relative to localized impacts or a substantial increase in the severity of a previously identified significant impact evaluated in the Final EIR would occur. No mitigation is required.

d) Emission Odors: Less than Significant Impact

Verano 8 Graduate Student Housing

The SCAQMD *CEQA Air Quality Handbook* identifies certain land uses as sources of odors. These land uses include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The Project would not include any of these land uses. During construction, some odors (not substantial pollutant concentrations) that may be detected are typical of construction vehicles (e.g. diesel exhaust from grading and construction equipment). These odors are a temporary short-term impact that is typical of construction projects and disperse rapidly. Therefore, the project would not create objectionable odors. No mitigation is required.

LRDP Student Housing Amendment

The LRDP EIR concluded that the 2007 LRDP would not generate objectionable odors. The LRDP Student Housing Amendment would provide additional student housing on the campus and would not increase enrollment. Student housing would not result in a source of objectionable odors and no impact would occur. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.3 Biological Resources

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CA Department of Fish and Wildlife or U.S. Fish and Wildlife Service?			X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?		X			
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X			

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X			
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?					X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other applicable habitat conservation plan?					X

Discussion

Biological resources issues are discussed in Section 4.3 of the 2007 LRDP EIR.

a) Sensitive Species: Less than Significant Impact with Project-level Mitigation Incorporated

b) Riparian Habitat: Project Impact Adequately Addressed in LRDP EIR

c) Wetlands: Project Impact Adequately Addressed in LRDP EIR

Verano 8 Graduate Student Housing

The proposed project would be located on a previously developed site within the East Campus, and is surrounded by adjacent development in an urbanized setting. No candidate, sensitive, or special-status species, riparian habitat, or federally protected wetlands occur on the project site.

Existing on-site vegetation, where birds protected under the Migratory Bird Treaty Act (MBTA) may occur during the nesting season, would be removed during demolition and grading. Construction is anticipated to begin in April 2020 during the nesting season and could potentially impact avian and raptor species located in on-site or adjacent vegetation. Therefore, compliance with project-specific mitigation measure BR-1, which would require bird surveying three days prior to construction, would reduce potential impacts to sensitive species to a less than significant level.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core and a 12-acre parcel within the West Campus. The majority of the Academic Core and East Campus have been previously developed and increased housing density would largely be the result of demolition and redevelopment of existing student housing. These infill areas in the Academic Core and East Campus contain ornamental or disturbed vegetation and impacts to candidate, sensitive, or special-status species, riparian habitat, or federally protected wetlands would not occur.

The 12-acre parcel in the West Campus, as shown in Figure 4.3-2D in the 2007 LRDP EIR, does not contain sensitive species or habitat; however, the site is currently undeveloped and could have the potential for sensitive biological resources to occur on-site. Within the southern area of the East Campus west of the existing Vista del Campo student housing, there is an area designated as Student Housing that is currently undeveloped. As shown in Figure 4.3-2D of the 2007 LRDP EIR, there are small patches of mulefat scrub and an adjacent drainage that could be impacted by future projects that implement the LRDP Amendment. However, incorporation of LRDP EIR mitigation measures, Bio-2B, Bio-3A, Bio-3B, Bio-3C, and Bio-3D would require project-level biological surveying, avoidance/minimization of sensitive resources to the extent feasible, obtaining any necessary regulatory permits whose jurisdiction is impacted (i.e., USFWS, CDFW, RWQCB), and 50-foot setbacks from flow lines to the extent feasible would reduce impacts to sensitive biological resources in the West Campus and East Campus. These surveys would be conducted during the project-level CEQA analysis for any future development located within these undeveloped areas, as needed.

Additionally, all future projects would comply with the General Construction Storm Water Permit program, which would implement construction control measures to be specified in the project's Storm Water Pollution Prevention Plan (SWPPP) and install and maintain the post-construction best management practices (BMPs) to be specified in the project's Water Quality Management Plan (WQMP). Compliance with the permit would ensure that runoff from future development does not violate any water quality standards.

Therefore, with implementation of LRDP EIR mitigation measures Bio-2B, Bio-3A, Bio-3B, Bio-3C, and Bio-3D, impacts to candidate, sensitive, or special-status species; riparian habitat; or federally protected wetlands due to implementation of the proposed LRDP Student Housing

Amendment would be reduced to a less than significant level.

d) Wildlife Corridors: Project Impact Adequately Addressed in LRDP EIR

Verano 8 Graduate Student Housing

The 2007 LRDP EIR determined that the campus is bordered by mixed use, residential uses, and roadways with limited wildlife movement corridors in the vicinity. The project site is located more than a mile from drainage culverts that were placed under the State Route 73 (SR-73) Toll Road to support movement between the Bonita Canyon Wetland areas, San Joaquin Hills, and the Natural Community Conservation Plan Reserve System lands on the campus (LRDP EIR, page 4.3-47). As discussed in Section 2.0, Project Description, the project site is located in an urbanized area of the campus, which is not conducive to wildlife movement. Therefore, the proposed project would not interfere with wildlife corridors and no impact would occur. No mitigation is required.

LRDP Student Housing Amendment

The 2007 LRDP EIR determined that the campus is bordered by mixed use, residential uses, and roadways with limited wildlife movement corridors in the vicinity. Of the areas impacted by the proposed LRDP Amendment, the nearest to the wildlife movement corridor is the 12-acre West Campus site, which is located more than 2,000 feet from drainage culverts that were placed under the State Route 73 (SR-73) Toll Road to support movement between the Bonita Canyon Wetland areas, San Joaquin Hills, and the NCCP Reserve System lands on the campus (LRDP EIR, page 4.3-47). Although, as discussed in the LRDP EIR, impacts due to buildout of the LRDP EIR, which includes the development of the proposed areas in the LRDP Amendment, would not result in significant impacts to the movement of wildlife corridors. In addition, future projects that implement the LRDP Amendment would adhere to LRDP EIR mitigation measure Bio-2B, which requires wildlife surveying for projects within previously undeveloped areas. Therefore, with implementation of LRDP EIR mitigation measure Bio-2B, impacts due to the implementation of the proposed LRDP Amendment would be reduced to a less than significant level.

e) Conflict with Applicable Policies: No Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

As discussed above in 4.3(a), 4.3(b), and 4.3(c), with the incorporation of project-specific mitigation measures BR-1 and LRDP EIR mitigation measures Bio-3A, Bio-3B, Bio-3C, and Bio-3D, the proposed project and LRDP Amendment would not conflict with applicable federal, state, or local policies protecting biological resources. Additionally, the University is the only agency with local land use jurisdiction over campus land. No specific UC policies have been adopted for the campus protecting biological resources. Therefore, the proposed project would not conflict with local policies protecting biological resources and no impact would occur. No mitigation is required.

f) Conflict with a Natural Community Conservation Plan or Habitat Conservation Plan: No Impact

Verano 8 Graduate Student Housing

The project site, which is located in the East Campus, is not within a Habitat Conservation Plan, Natural Community Conservation Plan, or any other habitat conservation plan and does not conflict with the Orange County NCCP/HCP. Therefore, no impacts would occur. No mitigation is required.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core and a 12-acre parcel within the West Campus. None of these areas are located within a Habitat Conservation Plan, Natural Community Conservation Plan, or any other habitat conservation plan, including the Orange County NCCP/HCP, and therefore, no impacts would occur. No mitigation is required.

Mitigation Measures

BR-1: In order to avoid impacts to nesting birds, project activities shall occur outside of the peak avian breeding season, which runs from February 1st through August 31st. If project construction is necessary during the bird breeding season, a qualified biologist with experience in conducting bird breeding surveys shall conduct surveys for nesting birds, within three days prior to the work in the area, and ensure no nesting birds in the project area would be impacted by the project. If an active nest is identified, a buffer shall be established between the construction activities and the nest so that nesting activities are not interrupted. The buffer shall be a minimum width of 300 feet (500 feet for raptors), be delineated by temporary fencing, and remain in effect as long as construction is occurring or until the nest is no longer active. Reductions in the nest buffer distance may be appropriate depending on the avian species involved, ambient levels of human activity, screening vegetation, or other possible factors.

LRDP EIR Bio-2B: Prior to initiating on-site construction for future projects that implement the 2007 LRDP and that involve land clearing, grading, or similar land development activities adjacent to habitat areas identified as suitable for sensitive wildlife species, UCI shall retain a qualified biologist to conduct a sensitive wildlife survey of the respective areas within 150 feet of the approved limits of disturbance. If sensitive wildlife species are detected from the survey, then UCI shall approve contractor specifications that include measures to reduce indirect construction and post-construction impacts to the identified species, to the maximum extent feasible. These measures shall include, but are not limited to, the following:

i. A pre-construction meeting shall be held to ensure that construction crews are informed of the sensitive wildlife and habitats in the vicinity of the construction site. Prior to commencement of clearing or grading activities, a biologist (or other qualified person) shall supervise the installation of temporary construction fencing along the approved limits of disturbance to discourage errant intrusions into the identified sensitive wildlife habitats by construction vehicles or personnel. All construction access and circulation shall be limited to designated construction zones. This fencing shall be removed upon completion of construction activities.

ii. If suitable habitat for raptors or protected bird species is present and raptors or protected bird species are observed in the vicinity, the pre-construction surveys for active nests shall be performed within 30 calendar days prior to commencement of clearing or grading activities during the breeding season for raptors and protected bird species (generally February 1 through August 31) at locations where suitable nesting habitat exists within 500 feet of the approved limits of disturbance. Construction activities within 500 feet of active raptor nests (300 feet for protected bird species) shall be monitored by the biologist and modified as directed by the biologist until the biologist determines that the nest is no longer active. Construction activity may encroach into the 500-foot buffer area only at the discretion of the biologist.

iii. Refer to mitigation measure Noi-2A for noise abatement measures during construction.

iv. Storm water treatment and erosion control measures or facilities shall be maintained in a manner that avoids the discharge of polluted runoff and erosion impacts to the identified sensitive plants.

v. Night lighting shall be avoided during construction. Any necessary lighting shall be shielded to minimize temporary lighting of the surrounding habitat.

vi. A biological monitor shall be present on-site on at least a weekly basis during rough grading to ensure that the fenced construction limits are not exceeded.

vii. Permanent lighting adjacent to natural habitat areas shall be selectively placed, shielded, and directed to minimize impacts to sensitive wildlife.

LRDP EIR Bio-3A: For future projects that implement the 2007 LRDP and are located on sites containing mule fat scrub or herbaceous wetland habitats, UCI shall retain a qualified biologist to conduct a survey of these habitats. If project-level surveys determine that mule fat scrub riparian habitat and/or herbaceous wetland habitat may be impacted by the project, then mitigation measures Bio-3B and 3C shall be implemented.

LRDP EIR Bio-3B: For future projects that implement the 2007 LRDP and could impact mule fat scrub riparian habitat and/or herbaceous wetland habitats as determined by mitigation measure Bio-3A, design features shall be considered to avoid and/or minimize direct impacts to these sensitive vegetation communities, to the extent feasible. If it is not feasible to avoid these impacts, then mitigation measure Bio-3C shall be implemented.

LRDP EIR Bio-3C: For future projects that implement the 2007 LRDP and would impact mule fat scrub riparian habitat and/or herbaceous wetland habitat, if these areas contain jurisdictional wetlands, all necessary regulatory permits shall be obtained and impacts shall be mitigated through implementation of Mitigation Measure Bio 4A. If no jurisdictional wetlands are present, impacts to mule fat scrub riparian habitat and/or herbaceous wetland habitat of greater than 0.1 acre shall be mitigated at ratios of 1:1 through habitat creation, restoration, or enhancement. Mitigation shall occur within dedicated campus open space areas where feasible, or at off-campus locations if on-site mitigation is not feasible. A qualified biologist shall assist in preparation, implementation, and monitoring of a habitat restoration plan, identifying the site preparation and installation requirements, establishment, monitoring, and long term management of the mitigation areas. Impacts to less than 0.1 acre of these habitat types, where no jurisdictional wetlands are present, would not require mitigation.

LRDP EIR Bio-3D: As early as possible in the planning process for future projects that implement the 2007 LRDP and are adjacent to designated campus open space areas containing riparian or wetland vegetation, UCI shall ensure that the projects include a 50-foot setback from the flow line, to the extent practicable.

4.4 Cultural Resources

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?		X			
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		X			
c) Disturb any human remains, including those interred outside of formal cemeteries?				X	

Discussion

Cultural resources issues are discussed in Section 4.4 of the 2007 LRDP EIR. This section summarizes information for cultural resources relevant to the proposed project. Tribal cultural resources and tribal consultation under California Assembly Bill 52 are discussed separately in Section 4.16, Tribal Cultural Resources.

a) Historical Resources: Project Impact Adequately Addressed in LRDP EIR

Verano 8 Graduate Student Housing

As discussed in Section 2.0, Project Description, the only existing on-site structural uses are a maintenance and operations facility and Lot 27, none of which would be considered an historical resource under Section 15064.5 of the CEQA Guidelines. Furthermore, LRDP EIR Table 4.4-2 lists campus buildings that would be at least 50 years old by the LRDP horizon year of 2025 and eligible for the Register of Historical Resources based on age (page 4.4-15). None of the structures listed are located on the project site. Therefore, the proposed project would not cause a substantial adverse change to an historical resource and no impact occur. No mitigation is required.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, the six-acre parcel within the Academic Core from Academic and Support to Student Housing and the undeveloped 12-acre parcel within the West Campus from Student Housing to Academic and Support. The majority of the Academic Core and East Campus have been previously developed and increased housing density would partially be the result of redevelopment of previously developed sites at a higher density. As a result, impacts to campus buildings over the age of 50 that are potentially eligible for the Register of Historical Resources could occur. However, with implementation of LRDP EIR mitigation measures Cul-2A, Cul-2B, Cul-2C, and Cul-2D, which would require historical evaluation of projects sites that contain facilities 50 years or older, determining its historical significance, and, if needed, documentation of the historic resource, would reduce impacts to potential historic resources to a less than significant level.

b) Archaeological Resources: Project Impact Adequately Addressed in EIR

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

Recorded archaeological resources located within the UCI campus are summarized in Table 4.4-1 of the 2007 LRDP EIR. Archaeological sites have been discovered and recorded in the West Campus, East Campus, South Campus, and North Campus, and there is a possibility that unknown archaeological remains could occur beneath the ground surface for the proposed Verano 8 project and future projects that implement the LRDP Amendment (LRDP EIR, page 4.4-4). Earth moving activities could possibly uncover previously undetected archaeological remains associated with prehistoric cultures, and a loss of a significant archaeological resource could result if such materials are not properly identified. Therefore, with implementation of LRDP EIR mitigation measure Cul-1C, which would require monitoring during grading by a qualified archaeologist, would reduce impacts to archaeological resources for the proposed Verano 8 project and future projects that implement the LRDP Amendment to a less than significant level.

c) Human Remains: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

Human remains may be uncovered during earth moving activities associated with construction of the proposed Verano 8 project or future projects that implement the LRDP Amendment. In the event that human remains are discovered during construction, UCI would comply with Section 7050.5 of the California Health and Safety Code and Public Resources Code 5097.98, which requires notification of the County Coroner to determine whether the remains are of forensic interest. If the Coroner, with the aid of a supervising archeologist, determines that the remains appear to be Native American, s/he would contact the Native American Heritage Commission (NAHC) within 24 hours, who would in turn, notify the person they identify as the most likely descendent (MLD) of the human remains. Further actions would be determined by the MLD who has 48 hours after notification of the NAHC to make recommendations regarding the disposition of the remains. Therefore, compliance with the California Health and Safety Code and Public Resources Code would reduce potential impacts to human remains to a less than significant level. No mitigation is required.

Mitigation Measures

LRDP EIR Cul-1C: Prior to land clearing, grading, or similar land development activities for future projects that implement the 2007 LRDP in areas of identified archaeological sensitivity, UCI shall retain a qualified archaeologist (and, if necessary, a culturally affiliated Native American) to monitor these activities. In the event of an unexpected archaeological discovery during grading, the on-site construction supervisor shall redirect work away from the location of the archaeological find. A qualified archaeologist shall oversee the evaluation and recovery of archaeological resources, in accordance with the procedures listed below, after which the on-site construction supervisor shall be notified and shall direct work to continue in the location of the archaeological find. A record of monitoring activity shall be submitted to UCI each month and at the end of monitoring. If an archaeological discovery is determined to be significant, the archaeologist shall prepare and implement a data recovery plan. The plan shall include, but not be limited to, the following measures:

a. Perform appropriate technical analyses;

b. File an resulting reports with South Coast Information Center; and

c. Provide the recovered materials to an appropriate repository for curation, in consultation with a culturally-affiliated Native American.

LRDP EIR Cul-2A: During preparation of the Initial Study for future projects that implement the 2007 LRDP, are located on sites containing facilities that are 50 years of age or older, and are potential historic resources, a qualified professional shall define and survey the Area of Potential Effect (APE) on the project site. The APE shall be based on the extent of ground disturbance and site modification anticipated for the project. If historic resources are present within the project APE, then mitigation measure Cul-2B shall be implemented.

LRDP EIR Cul-2B: Before altering or otherwise affecting historic resources within the project APE as determined by mitigation measure Cul-2A, they shall be evaluated for significance by the architectural historian in accordance with CEQA Guidelines Section 15064.5. The evaluation process shall include the development of appropriate historical background research as context for the assessment of the significance of the historic resources in the history of the UC system, UCI, and the region. The historic resources shall be recorded on a California Department of Parks and Recreation DPR 523 form or equivalent documentation. If the historic resources are determined to be significant, then mitigation measure Cul-2C shall be implemented.

LRDP EIR Cul-2C: For historic resources determined to be significant as determined by mitigation measure Cul2B, UCI shall consider measures that would enable the project to avoid direct or indirect impacts to the significant historic resources. For significant historic resources in which avoidance or reuse on-site is not feasible, mitigation measure Cul-2D shall be implemented.

LRDP EIR Cul-2D: For significant historic resources in which avoidance or reuse on-site is not feasible as determined by mitigation measure Cul-2C, one of the following options shall be implemented:

i. Remodeling, renovation, or other alterations to significant historic resources within the project APE shall be conducted in compliance with the "Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings."

ii. Prior to relocation or demolition of significant historic resources within the project APE, a qualified professional shall document the resources, including any buildings, associated landscaping and setting. Documentation shall include still and video photographs (to be provided on a CD-ROM) and a written record in accordance with the standards of the Historic American Building Survey or Historic American Engineering Record, including accurate scaled mapping, architectural descriptions, and scaled architectural plans, if available. The record shall be accompanied by a report containing site-specific history and appropriate contextual information. This information shall be gathered through site-specific and comparative archival research and oral history collection as appropriate. A copy of the record shall be deposited with the UCI archives.

iii. As appropriate, include features in the design of the new project that reuse or represent features or the historic building or provide interpretative information on the historic resource.

4.5 Energy

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?				X	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?					X

Discussion

Energy thresholds were added in the 2018 CEQA Guidelines Update, which came into effect on December 28, 2018. As such, an Energy section was not specifically included in the 2007 LRDP EIR. However, many energy-related issues are discussed in Section 5.0 of the LRDP EIR, which addresses climate change and greenhouse gas emissions.

a) Energy Resources: Less than Significant Impact

b) Conflict with Renewable Energy or Efficiency Plan: No Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

The proposed Verano 8 project and future projects associated with the implementation of the LRDP Amendment would be constructed to adhere to the UC Sustainable Practices Policy, which implements system-wide building standards to reduce energy use through green building design and clean energy. Although construction of the proposed Verano 8 project and projects that implement the LRDP Amendment would increase the amount of energy use on the campus, all UCI projects would incorporate various sustainable project design features (e.g., water conservation measures, meet or exceed LEED Silver rating, exceed Title 24 by 20 percent, use energy efficient lighting, etc.) in compliance with the UC Sustainable Practices Policy. In order for the campus to reach the carbon neutrality goal of zero emissions of scope 1 and 2 sources by 2025 and scope 3 sources by 2050 as required by the Carbon Neutrality Initiative and the UC Sustainable Practices Policy, the campus has identified a tiered set of strategies. These strategies include low-carbon growth through green building programs, reducing existing emissions through deep energy efficiency, replacing fossil fuel-based energy by deploying of on-site renewable energy and procuring off-site renewable energy, and mitigating the remaining carbon emissions through offset programs. Therefore, these projects would not impede the campus' ability to reduce energy usage as it would achieve a high attainment of energy efficiency in accordance with UC policy.

Therefore, in compliance with the UC Sustainable Practices Policy, the proposed Verano 8 project and future projects that implement the LRDP Amendment would not result in inefficient or unnecessary consumption of energy nor would it conflict with a State or local plan for renewable energy or energy efficiency. No mitigation is required.

4.6 Geology and Soils

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:					
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				**X**	
ii) Strong seismic ground shaking?				**X**	
iii) Seismic-related ground failure, including liquefaction?				**X**	
iv) Landslides				**X**	
b) Result in substantial soil erosion or the loss of topsoil?				**X**	

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?				X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?					X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X			

Discussion

Geology and soils and paleontological resources are discussed in Sections 4.5 and 4.4, respectively, of the 2007 LRDP EIR.

a) Expose People or Structures to:

i) Fault Rupture: Less than Significant Impact

<u>*Verano 8 Graduate Student Housing*</u>

No active or potentially active earthquake faults have been identified on the UCI campus through the State Alquist-Priolo Earthquake Fault Zoning Act program, but a locally mapped fault trace, known as the UCI Campus Fault, traverses the campus. A Restricted Use Zone (RUZ) extending 50 feet beyond both sides of this fault has been established to prevent the construction of new development on the fault in case of rupture (LRDP EIR, pages 4.5-8 through 9). The RUZ does not extend onto the project site, which is located approximately 1,500 feet northeast of the fault. Grading, foundation, and building structure elements would be designed to meet or exceed the California Building Code (CBC) seismic safety standards and comply with the UC Seismic Safety Policy. Therefore, due to project site location and compliance with the CBC, impacts due to fault rupture would be less than significant.

LRDP Student Housing Amendment

As shown in Figure 4.5-1 of the 2007 LRDP EIR, the UCI Campus Fault runs in a northwest-to-southeast direction through the Academic Core and East Campus. Although the fault runs adjacent to areas designated as Student Housing in the LRDP Amendment, future development would not be sited within the 50-foot RUZ. The RUZ areas adjacent to Student Housing in the East Campus are designated as Open Space in the 2007 LRDP. Additionally, future projects associated with the LRDP Amendment would be designed to meet or exceed the CBC seismic safety standards and comply with the UC Seismic Safety Policy. Therefore, due to adherence to the RUZ and compliance with the CBC, impacts due to fault rupture would be less than significant.

ii) Seismic Ground Shaking: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

The entire campus, like most of southern California, is located in a seismically active area where strong ground shaking could occur during movements along any one of several faults in the region. An earthquake of magnitude 7.5 on the Richter scale could occur along the Newport-Inglewood Fault, the nearest major fault located approximately 4.5 miles southwest of the campus. Earthquakes along the San Andreas Fault, approximately 35 miles northeast of the campus could generate an 8.0 magnitude level of energy, and movement along the San Jacinto Fault, approximately 30 miles away, could release ground motion energy estimated at 7.5 on the Richter scale (LRDP EIR, page 4.5-2).

An earthquake along any number of local or regional faults could generate strong ground motions at the subject site that could dislodge objects from walls, ceilings, and shelves or even damage and destroy buildings and other structures, and people within campus project could be exposed to these hazards. However, grading, foundation, and building structure elements would be designed to meet or exceed the CBC seismic safety standards. In addition, the University has adopted a number of programs and procedures to reduce the hazards from seismic shaking, including compliance with the UC Seismic Safety Policy, which to the extent feasible, requires earthquake engineering standards for new construction and renovation projects to provide an acceptable level of earthquake safety for campus users. Therefore, compliance with the CBC, UC Seismic Safety Policy, and implementation of any recommendations in site-specific geotechnical studies prepared during the design phase of the proposed Verano 8 project and future projects that implement the LRDP Amendment would reduce any potential hazards associated with seismic ground shaking to a less than significant level. No mitigation is required.

iii) Liquefaction: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

As discussed in the LRDP EIR (page 4.5-9), the majority of soils on the UCI campus are characterized as terraced deposits and are therefore unlikely that these soils would be subject to liquefaction due to the denseness of the material and the depth to groundwater. Additionally, the proposed Verano 8 project and future projects that implement the LRDP Amendment would prepare a project-specific geotechnical report during the design phase and implement the recommendations as part of construction. Therefore, compliance with the CBC, UC Seismic Safety Policy, and implementation of any recommendations in the site-specific geotechnical investigation conducted during the design phase would reduce potential hazards associated with liquefaction to a less than significant level. No mitigation is required.

iv) Landslide: Less than Significant Impact

Verano 8 Graduate Student Housing

Landslides often occur due to strong ground shaking, which is due to generally weak soil and rock on sloping terrain. However, as discussed in 4.6-4(a)(iii), the majority of soils on the campus are characterized as terraced deposits. Additionally, the project site, which has been previously graded and disturbed, is located on and adjacent to flat terrain, which characterizes a low potential for landslides. Furthermore, the project site is not located in an area considered to be susceptible to seismically induced landslides according to the California Geological Survey.[1] Therefore, impacts due to landslides would be less than significant. No mitigation is required.

LRDP Student Housing Amendment

The majority of the campus is characterized as gentle sloping to flat terrain with the exception of the South Campus (LRDP EIR page 4.5-9). As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core from Academic and Support to Student Housing and a 12-acre parcel within the West Campus from Student Housing to Academic and Support. No proposed changes would occur in the South Campus where some land areas are characterized by steep terrain. Additionally, future projects that implement the LRDP Amendment would comply with the CBC and UC Policy on Seismic Safety, which would reduce potential impacts due to landslides. Therefore, due to the proposed locations that would be impacted through the implementation of the LRDP

[1] https://maps.conservation.ca.gov/cgs/informationwarehouse/landslides/. Accessed April 3, 2019.

Amendment and compliance with the CBC and UC Policy on Seismic Safety, impacts due to landslides would be less than significant. No mitigation is required.

b) Soil Erosion: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

As noted in the LRDP EIR, earth-disturbing activities associated with the proposed Verano 8 project and future projects that implement the LRDP Amendment that may result in soil erosion would be temporary. The projects would comply with the CBC, which regulates excavation and grading activities, and the National Pollutant Discharge Elimination System (NPDES) general permit for construction activities, which requires preparation of an erosion control plan and implementation of construction best management practices (BMPs) to prevent soil erosion. Such BMPs could include, but not limited to, silt fences, watering for dust control, straw-bale check dams, and hydroseeding. The LRDP EIR concluded that with implementation of these routine control measures potential construction-related erosion impacts would be less than significant (LRDP EIR, page 4.5-10).

Although the proposed Verano 8 project and future projects that implement the LRDP Amendment would increase impermeable surfaces throughout the campus, significant soil erosion is not anticipated to occur during operation. As discussed in Section 4.8, Hydrology and Water Quality, in the event that storm water runoff were to increase, velocities would be reduced to preexisting conditions to the extent feasible (LRDP mitigation measure Hyd-1A). Therefore, impacts due to soil erosion would be less than significant. No additional mitigation is required.

c) Soil Instability: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

If loose or compressible soil materials occur on site, they may be subject to settlement under increased loads. Soil instability may also occur due to an increase in moisture content from site irrigation or changes in drainage conditions. Typical measures to treat such unstable materials involve removal and replacement with properly compacted fill, compaction grouting, or deep dynamic compaction. A detailed site-specific geotechnical investigation would be conducted during the design phase of the proposed Verano 8 project and future projects that implement the LRDP Amendment and any recommendations would be implemented in accordance with the CBC. Therefore, potential impacts associated with unstable materials would be reduced to a less than significant level. No mitigation is required.

d) Expansive Soils: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

Expansive topsoils are prevalent on the UCI campus and are generally a dark brown sandy clay, clayey sand, or lean clay, which can be detrimental to foundations, concrete slabs, flatwork, and pavement. Topsoil throughout the campus is highly expansive, ranging from eight to 12 percent swell with an underlying material generally consisting of non-expansive to moderately expansive terrace deposits with a swell ranging from zero to eight percent.

The CBC includes provisions for construction on expansive soils. Proper fill selection, moisture control, and compaction during construction can prevent these soils from causing significant damage. Expansive soils can be treated by removal (typically the upper three feet below finish grade) and replacement with low expansive soils, lime-treatment, and/or moisture conditioning. The geotechnical investigations and soils testing to be conducted as part of the routine final design process of the proposed Verano 8 project and future projects that implement the LRDP Amendment would determine the extent of any expansive or compressible soils that occur on the site. Therefore, adherence to the CBC and implementation of any recommendations in the detailed project-specific geotechnical investigation conducted during the design phase would reduce impacts due to expansive soils to a less than significant level. No mitigation is required.

e) Septic Tanks or Alternative Waste Disposal Systems: No Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

All wastewater generated by the campus is conveyed via local sewers directly into the existing public sanitary sewer system maintained by the Irvine Ranch Water District (IRWD). Therefore, the proposed Verano 8 project and future projects that implement the LRDP Amendment would not include a sanitary waste disposal system and no impact would occur. No mitigation is required.

f) Paleontological Resources and Geologic Features: Project Impact Adequately Addressed in the EIR

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

Paleontological investigations conducted for the 1989 LRDP determined that the Topanga Formation geologic units under the campus are considered to be of high paleontological sensitivity for vertebrate and invertebrate fossils. The assessment noted that one of the most unique features on the campus is the micro-paleontological material found along Bonita Canyon Drive, consisting of microscopic fossils of single-celled animals that inhabited the sea floor. The fossils contained in these exposures are of regional and interregional significance because they provide the basis for comparisons between the depositional histories of various parts of the Los Angeles Basin (LRDP EIR, page 4.4-19). Given the geological setting and recognized high sensitivity for vertebrate and invertebrate fossils on the campus, excavation operations, such as trenching and/or tunneling that cut into geologic formations, might expose fossil remains. According to the 2007 LRDP EIR, any project involving excavation into either the Topanga Formation or the terrace deposits could have an adverse effect on paleontological resources. Therefore, implementation of LRDP EIR mitigation measures Cul-4A, Cul-4B, and Cul-4C, which requires monitoring during grading and proper recovery if fossils are found, would reduce impacts to paleontological resources for the proposed Verano 8 project and future projects that implement the LRDP Amendment to a less than significant level (LRDP EIR, page 4.4-20).

Mitigation Measures

LRDP EIR Cul-4A: Prior to grading or excavation for future projects that implement the 2007 LRDP and would excavate sedimentary rock material other than topsoil, UCI shall retain a qualified paleontologist to monitor these activities. In the event fossils are discovered during grading, the on-site construction supervisor shall be notified and shall redirect work away from the location of the discovery. The recommendations of the paleontologist shall be implemented with respect to the evaluation and recovery of fossils, in accordance with mitigation measures Cul-4B and Cul-4C, after which the on-site construction supervisor shall be notified and shall direct work to continue in the location of the fossil discovery. A record of monitoring activity shall be submitted to UCI each month and at the end of monitoring.

LRDP EIR Cul-4B: If the fossils are determined to be significant, then mitigation measure Cul-4C shall be implemented.

LRDP EIR Cul-4C: For significant fossils as determined by mitigation measure Cul-4B, the paleontologist shall prepare and implement a data recovery plan. The plan shall include, but not be limited to, the following measures:

a. The paleontologist shall ensure that all significant fossils collected are cleaned, identified, catalogued, and permanently curated with an appropriate institution with a research interest in the materials (which may include UCI);

b. The paleontologist shall ensure that specialty studies are completed, as appropriate, for any significant fossil collected; and

c. The paleontologist shall ensure that curation of fossils are completed in consultation with UCI. A letter of acceptance from the curation institution shall be submitted to UCI.

4.7 Greenhouse Gas Emissions

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?				X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?					X

Discussion

Greenhouse gas (GHG) issues are discussed in Section 5.0 of the 2007 LRDP EIR. A project-specific Greenhouse Gas Assessment was prepared by Kimley-Horn and Associates, Inc. and is included as Appendix B of this IS/MND.

a) Greenhouse Gas Emissions: Less than Significant Impact

<u>*Verano 8 Graduate Student Housing*</u>

Short-Term Construction Greenhouse Gas Emissions

The proposed Verano 8 project would result in direct GHG emissions from construction. The duration of construction associated with the proposed project is estimated to last up to 26 months and would require a net cut of approximately 14,000 cubic yards (CY) of soil. Construction-related emissions were calculated using CalEEMod, which is designed to model emissions for land use development projects based on typical construction requirements. The approximate daily GHG emissions generated by construction equipment utilized to build the proposed project are included in Table 4.7-1.

As shown in Table 4.7-1, project construction would generate approximately 1,272 $MTCO_2e$ of GHG emissions. Construction GHG emissions are typically summed and amortized over the project's lifetime (assumed to be 30 years), then added to operational emissions. The amortized project emissions would be 42 $MTCO_2e$ per year. Upon project completion, construction-related GHG emissions would cease.

Table 4.7-1
Construction-Related Greenhouse Gas Emissions

Category	$MTCO_2e$
Total Construction Emissions	1,272
30-Year Amortized Construction	42
Source: CalEEMod version 2016.3.2. Refer to Appendix B for model outputs.	

Long-Term Operational Greenhouse Gas Emissions

Operational or long-term emissions would occur over the project's life. The operational GHG emissions would result from direct emissions sources, such as project-generated vehicular traffic and operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power, energy required to convey water to and wastewater from the project site, emissions associated with solid waste generated from the project, and any fugitive refrigerants from air conditioning or refrigerators. The total operational GHG emissions are summarized in Table 4.7-2, which shows that the combined construction-related GHG emissions would generate approximately 2,434 $MTCO_2e$ annually. The proposed project would not exceed the SCAQMD GHG threshold of 3,000 $MTCO_2e$ per year. Additionally, as the proposed project would construct approximately 1,200 beds, the service population would also be 1,200 residents resulting in 2.02 $MTCO_2e$ per service population per year, which is below the 3.0 $MTCO_2e$ threshold. Therefore, project-related GHG emissions would be less than significant. No mitigation is required.

Table 4.7-2
Verano 8 – Greenhouse Gas Emissions

Emissions Source	$MTCO_2e$ per Year
Construction Amortized Over 30 Years	42
Area Source	7
Energy	1,184
Mobile	890
Waste	90
Water and Wastewater	221
Total	**2,434**
SCAQMD Project Screening Threshold	**3,000**
Service Population	1,200

Project GHG Efficiency ($MTCO_2e$ per Service Population per Year)	**2.02**
GHG Efficiency Target ($MTCO_2e$ per Service Population per Year)	**3.0**
Exceeds Threshold?	No
Source: CalEEMod version 2016.3.2. Refer to Appendix B for model outputs.	

LRDP Student Housing Amendment

The LRDP EIR determined that implementation of the LRDP would increase GHG emissions from construction and operations, particularly from vehicle operations. However, GHG emissions would be less than significant. The additional operational emissions associated with the LDRP Amendment are summarized in Table 4.7-3, which shows that operational emissions would not exceed SCAQMD thresholds.

The LRDP Amendment would increase the overall student housing capacity; however, no changes to student enrollment or the Academic and Support square footage capacity would occur. The LRDP Amendment changes would provide infill residential development on the campus and reduce the need to travel from off-site locations, thereby reducing associated mobile source emissions. Table 4.7-3 shows that emissions associated with the LRDP Amendment would be less than significant. Additionally, LRDP Amendment operational emissions represent a small proportion of what was anticipated in the LRDP EIR and would not change the severity of impacts or require new mitigation measures. Therefore, no new impacts or a substantial increase in the severity of previously identified impacts evaluated in the LRDP EIR would occur.

Table 4.7-3
LRDP Student Housing Amendment – Greenhouse Gas Emissions

Emissions Source	$MTCO_2e$ per Year
Area Source	33
Energy	2,514
Mobile	2,878
Waste	218
Water and Wastewater	656
Total	6,298
Service Population	4,713
Project GHG Efficiency ($MTCO_2e$ per Service Population per Year)	**1.33**
GHG Efficiency Target ($MTCO_2e$ per	**3.0**

Service Population per Year)	
Exceeds Threshold?	**No**
Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.	

b) Conflict with a Greenhouse Gas Plan, Policy, or Regulation: No Impact

Verano 8 Graduate Student Housing

The proposed Verano 8 project would comply with the UC Sustainable Practices Policy, which establishes goals and policies to reduce GHG emissions from various sources system-wide. The policy includes goals in various areas of sustainable practices including green building design, clean energy, climate protection, transportation, building operations, zero waste, procurement, foodservices, and water systems.

As required by the UC Sustainable Practices Policy, all new buildings are required to outperform the California Building Code (CBC) energy-efficiency standards (Title 24) by at least 20 percent or meet whole-building energy performance targets identified within the policy. On-site fossil fuel combustion is limited to the extent feasible, and buildings are required to achieve U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) "Silver" standards at minimum and strive to achieve LEED "Gold" or higher. Additionally, the proposed project would not impede or conflict with any of the sustainable practices of the policy, including campus-wide clean energy, energy efficiency, renewable energy, and sustainable transportation.

The proposed project would also be consistent with the UCI Climate Action Plan (CAP), which identifies UCI's long-term vision and commitment to reduce its GHG emissions in support of the UC Sustainable Practices Policy and campus sustainability goals. These commitments include reduction of GHG emissions to 1990 levels by the year 2020 (a reduction of approximately 49 percent from projected emissions), climate neutrality by the year 2025 (for on-site combustion of fossil fuels and purchased electricity), and climate neutrality by the year 2050 (for UCI commuters and university-funded air travel). As discussed in 4.7-1(a) above, GHG emissions from the proposed project would be approximately 1,272 $MTCO_2e$ per year with implementation of the green building requirements of the UC Sustainable Practices Policy and would not surpass the SCAQMD threshold of 3,000 $MTCO_2e$ per year.

The proposed project demonstrates consistency with CAP goals, measures, and emission reduction targets, and would not conflict with any regulation adopted to reduce GHG emissions, including Title 24, AB 32, and SB 32. Therefore, the proposed project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions and no impact would occur. No mitigation is required.

LRDP Student Housing Amendment

The LRDP EIR identified various existing UCI emissions reduction programs, including alternative fuel use, green building programs, sustainable landscaping, shuttle programs, transportation demand management programs, on-campus, housing, and waste prevention and recycling. Additional University of California reduction strategies include green building design for new buildings and renovations, clean energy standards, climate protection practices, sustainable transportation practices, sustainable operations, recycling and waste management, and environmentally preferable purchasing practices as required by the UC Sustainable Practices Policy. Future projects that implement the LRDP Amendment would be subject to the UCI CAP, UC Sustainable Practice Policy, and the emissions reduction programs identified above. Therefore, there would not be any new or substantially more severe environmental impacts. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.8 Hazards and Hazardous Materials

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?					X

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				X	
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?		X			
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				X	

Discussion

Hazards and hazardous materials issues are discussed in Section 4.6 of the 2007 LRDP EIR.

a) Transport, Use, Disposal of Hazardous Materials: Less than Significant Impact

b) Release of Hazardous Materials: Less than Significant Impact

Verano 8 Graduate Student Housing

For the apartment buildings and community center, long-term hazards would be storage, use, and disposal of minor quantities of materials typical of residential uses, such as solvents, cleaners, paints, and fertilizers. For the parking structure and maintenance and operations facility fertilizers, pesticides, paint, asphalt, fuels, and other hazardous materials would be used in limited quantities for maintenance. Implementation of the 2007 LRDP, including this project, would increase hazardous materials use and waste generation on campus; however, UCI policy implemented by the Office of Environmental Health and Safety (EH&S) requires transportation of all hazardous materials conform to all federal, State, and local requirements. Furthermore, significant hazards from materials stored within residential uses and parking facilities is unlikely.

Temporary, short-term related hazards for the project would include transport, storage, use, and disposal of asphalt, fuels, solvents, paints, thinners, acids, curing compounds, grease, oil, fertilizers, coating materials, and other hazardous substances used during construction. The contractor ensures responsibility, as part of the contract, that hazardous materials and waste are handled, stored, and disposed of in accordance with all applicable Federal, State, and local laws and regulations and routine construction control measures (LRDP EIR, page 4.6-7). Therefore, compliance with Federal, State, and local regulation would reduce potential impacts from the release of hazardous materials to a less than significant level. No mitigation is required.

LRDP Student Housing Amendment

As discussed in the 2007 LRDP EIR, implementation would include development of facilities that use hazardous materials in teaching and research activities (page 4.6-25). Also, with an increase in on-campus facilities, expansion of maintenance and cleaning services would be required, which would increase the use, handling, storage, and disposal of products routinely used in building maintenance, some of which may contain hazardous materials. This, in turn, would result in an increase in the amount of hazardous materials that are used, stored, transported, and disposed and could increase the potential for an accident or accidental release of hazardous materials or wastes.

Future projects that implement the LRDP Amendment would be similar to those already present on campus. The LRDP Amendment would increase student housing density in the Academic Core and East Campus and change the land use designation of the six-acre parcel in the Academic Core from Academic and Support to Student Housing. Both planning sectors are predominantly built-out with compatible uses, such as academic space, student housing, and support facilities. These future student housing projects that implement the LRDP Amendment would not emit hazardous emissions or handle hazardous or acutely hazardous materials beyond the typical maintenance and cleaning chemicals typical of residential uses and support facilities.

The change in land use designation of the 12-acre parcel in the West Campus from Student Housing to Academic and Support could result in the construction of facilities that would use a variety of chemicals, compounds, and other materials that are considered hazardous, such as laboratories, maintenance facilities, and utilities. Hazardous material types that could be used include, but are not limited to, oxidizers, oxidizing gas, flammable solid, flammable gas, inert gas, unstable reactive, water reactive, toxic/highly toxic, pyrophoric, organic peroxide, combustible liquid, cryogenics, chemicals, and corrosives, as well as commercial cleaning products and landscape maintenance chemicals. However, the type, form, and concentrations of potentially hazardous materials proposed for use during operation and maintenance of future projects and how these would be transported, used, and stored, would be consistent with existing practices by UCI's Office of Environmental Health and Safety. Additionally, surrounding uses of the 12-acre parcel include a number of compatible uses, such as the Electrical Substation, Grounds Maintenance Facility, and Building Services.

As discussed in the 2007 LRDP EIR, transportation of hazardous materials and wastes along any City or State roadway or rail lines within or near the campus is subject to all relevant Department of Transportation (DOT), California Highway Patrol (CHP), and California Department of Health Services (DHS) hazardous materials and wastes transportation regulations, as applicable. Regular inspections of licensed waste transporters are conducted by a number of agencies to ensure compliance with requirements that range from the design of vehicles used to transport wastes to the procedures to be followed in case of spills or leaks during transit.

Temporary, short-term related hazards for future projects would include transport, storage, use, and disposal of asphalt, fuels, solvents, paints, thinners, acids, curing compounds, grease, oil, fertilizers, coating materials, and other hazardous substances used during construction. The contractor ensures responsibility, as part of the contract, that hazardous materials and waste are handled, stored, and disposed of in accordance with all applicable federal, State, and local laws and regulations and routine construction control measures (LRDP EIR, page 4.6-7). Therefore, compliance with federal, State, and local regulation would reduce potential impacts from the release of hazardous materials to a less than significant level. No mitigation is required.

c) Proximity to Schools: Less than Significant

Verano 8 Graduate Student Housing

There are no schools located within one-quarter mile of the project site; however, there are childcare facilities located easterly adjacent. The proposed project would construct apartment buildings and support facilities, including a parking structure, community center, and maintenance and operations facility, which would not emit hazardous emissions or handle hazardous or acutely hazardous materials beyond the typical maintenance and cleaning chemicals typical of residential uses and parking structures. Therefore, the proposed project would not emit large hazardous emissions in proximity to a school and no impact would occur. No mitigation is required.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core and a 12-acre parcel within the West Campus. There are four schools located within one-quarter mile of the campus, Tarbut V' Torah, Vista Verde Elementary, Turtle Rock Elementary, and University High School, and all of which are located near the East Campus. Future projects associated with the implementation of the LRDP Amendment would be student housing and support facilities, similar to the proposed

Verano 8 project, which could include, but not limited to, parking facilities, roadways, utility infrastructure, and maintenance facilities, which is similar in use to the surrounding off-campus users located on the edge of the East Campu. These projects would not emit hazardous emissions or handle hazardous or acutely hazardous materials beyond the typical maintenance and cleaning chemicals typical of residential uses and parking structures.

The 12-acre parcel in the West Campus parcel where land use is proposed to be changed from Student Housing to Academic and Support is located near the intersection of Bison Avenue and East Peltason. Future projects that implement the LRDP Amendment at the parcel could construct uses that are potentially hazardous, such as laboratories, where potential hazardous materials could be used, handled, and transported. However, this site in the West Campus is located more than a mile from the nearest school. Additionally, as described in 4.8(a) and 4.8(b) above, all hazardous materials would be handled in compliance with federal, state, and local regulations and are monitored by the Office of Environmental Health and Safety. Therefore, due to distance and compliance with federal, state, and local regulations, hazardous impacts due to proximity of schools would be less than significant. No mitigation is required.

d) Hazardous Materials Sites: No Impact

Verano 8 Graduate Student Housing

The 2007 LRDP EIR concluded that there are no recorded hazardous sites on or within the immediate vicinity of the project site, and according to the UCI Office of Environmental Health and Safety, no other known hazardous materials sites exist on-site (LRDP EIR, page 4.6-32). The project site is not included in any database of sites compiled pursuant to Section 65962.5 of the California Government Code, referred to as the Cortese List, and collected by the California Environmental Protection Agency (CalEPA 2016a). Specifically, the project site is not identified on (1) the California Department of Toxic Substances Control's (DTSC's) Hazardous Waste and Substances Site List, also called Envirostor; (2) DTSC's list of hazardous waste facilities where the DTSC has taken or contracted for corrective action because a facility owner/operator has failed to comply with a date for taking corrective action or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment; (3) State Water Resources Control Board's (SWRCB) Leaking Underground Storage Tank (LUST) sites, also called GeoTracker; (4) the SWRCB's list of Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO); and (5) the SWRCB's list of solid waste disposal sites with waste constituents above hazardous waste levels outside the waste management unit. Therefore, no impact due to hazardous materials sites would occur. No mitigation is required.

LRDP Student Housing Amendment

As discussed in the 2007 LRDP EIR and with further review of the above listed Cortese List, DTSC, Envirostor, Geotracker, CAO, and solid waste disposal sites, the only potentially hazardous site is located in the North Campus. As discussed in Section 2.0, Project Description, the LRDP Amendment would only increase student housing density within the Academic Core and East Campus and change the land use designation of two sites, one within the Academic Core and West

Campus. Future projects the implement the LRDP Amendment would not be constructed on the North Campus where the only LUST site is located. Therefore, implementation of the LRDP Amendment would not be located on a hazardous materials site and no impact would occur. No mitigation is required.

e) Airport Land Use Plan: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

The campus is located in the John Wayne Airport (JWA) planning area, which is approximately two miles northwest of the project site. The Airport Land Use Commission for Orange County has established Runway Protection Zones (RPZ) for JWA, also called Accident Potential Zones (APZ), which define the surrounding areas that are more likely to be affected if an aircraft-related accident were to occur. Those zones do not extend to the campus, including the Verano 8 project site and the areas of the campus impacted by the LRDP Amendment (East Campus, Academic Core, and West Campus), and because most aircraft accidents take place on or immediately adjacent to the runway it is unlikely that aircraft operating at JWA pose a safety threat to the campus. Additionally, as reported in the 2007 LRDP EIR, no accidents have occurred near the campus within the past 26 years (page 4.6-33).

As discussed in the 2007 LRDP EIR (page 4.9-33), JWA's 60 CNEL contour does not extend to the UCI campus and excessive noise due to the airport would not occur on the project site. Therefore, impacts due to the proximity to an airport would be less than significant. No mitigation is required.

g) Emergency Response: Project Impact Adequately Addressed in the LRDP EIR

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

In the event of a road closure for the proposed Verano 8 project or future projects that implement the LRDP Amendment, prior to the start of construction, the contractor would comply with LRDP EIR mitigation measure Haz-6A to ensure sufficient notification to the UCI Fire Marshal to allow coordination of emergency services that may be affected (LRDP EIR, page 4.6-34). Furthermore, all projects during both construction and operation would comply with UCI's Emergency Response Plan that addresses roles and responsibilities, communications, training, and procedures in order to respond to emergency situations. Therefore, with implementation of LRDP EIR mitigation measure Haz-6A and compliance with the Emergency Response Plan, potential impacts to emergency response on or surrounding the campus would be reduced to a less than significant impact.

h) Wildland Fires: Less than Significant Impact

Verano 8 Graduate Student Housing

The LRDP EIR concluded that areas prone to wildfire within the campus are vegetation communities, such as coastal sage scrub and grassland (4.6-35), which are flashy fuels that can easily ignite during dry conditions. The proposed project site is located in the East Campus and is surrounded by existing development on all sides, including roadways, student housing, and childcare facilities. No substantial vegetation communities exist on or adjacent to the project site that could result in wildland fire. Therefore, the proposed project would not subject people or structures to a significant risk of loss, injury, or death involving wildland fires and impacts would be less than significant. No mitigation is required.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core and a 12-acre parcel within the West Campus. As discussed in Section 4.19, Wildfire, the campus is not located in a high wildfire risk area. Additionally, the majority of the proposed changes in the LRDP Amendment are predominantly located within developed areas of the Academic Core and East Campus.

The southern area of the East Campus and the 12-acre parcel within the West Campus have adjacent areas designated as Open Space in the LRDP that consist of native vegetation. However, for future projects that implement the LRDP Amendment, fuel modification zones would be installed, as required by OCFA, which would reduce the potential for wildfire impacts. Additionally, areas designated as Open Space within the LRDP do not allow the construction of infrastructure unrelated to open space uses (i.e., trails, open space research); therefore, the LRDP Amendment would not require the installation or maintenance of infrastructure that would exacerbate fire risk and impacts would be less than significant. No mitigation is required.

Mitigation Measures

Haz-6A: Prior to initiating on-site construction for future projects that implement the 2007 LRDP and would involve a lane or roadway closure, the construction contractor and/or UCI Design and Construction Services shall notify the UCI Fire Marshal. If determined necessary by the UCI Fire Marshal, local emergency services shall be notified of the lane or roadway closure by the Fire Marshal.

4.9 Hydrology and Water Quality

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?		X			
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?					X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:		X			
i) Result in substantial erosion or siltation on- or off-site;		X			
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;		X			
iii) Create or contribute runoff water which		X			

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or					
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?					X

Discussion

Hydrology and water quality issues are discussed in Section 4.7 of the 2007 LRDP EIR.

a) Water Quality Standards: Project Impact Adequately Addressed in LRDP EIR

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

Applicable water quality standards developed by the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Board (RWQCB) for storm water are complied with through required permits, including the General Construction Storm Water Permit, which would control pollutants contained in runoff generated from campus properties (LRDP EIR, page 4.17-19).

Potential water quality impacts during construction of the proposed Verano 8 project and future projects that implement the LRDP Amendment would be stockpiled soils and materials stored outdoors on or adjacent to project sites during construction. Pollutants associated with these construction activities that could result in water quality impacts include soils, debris, other materials generated during site clearing and grading, fuels and other fluids associated with the equipment used for construction, paints and other hazardous materials, concrete slurries, and asphalt materials. These pollutants could impact water quality if washed, blown, or tracked off site to areas susceptible to wash off by storm water or non-storm water and could drain to one or more of the local receiving waters (LRDP EIR, page 4.7-21). Landscaping could also result in water quality impacts due to the use of fertilizers. If discharged, they could adversely affect aquatic plants and animals downstream in receiving waters through a reduction in oxygen levels and an increase in eutrophication (LRDP EIR, page 4.7-21).

All UCI projects would comply with the General Construction Storm Water Permit program, which would implement construction control measures to be specified in each project's Storm Water Pollution Prevention Plan (SWPPP) and install and maintain the post-construction best management practices (BMPs) to be specified in each project's Water Quality Management Plan (WQMP). Compliance with the permit would ensure that runoff from the developed sites does not violate any water quality standards.

The proposed Verano 8 project and future projects that implement the LRDP Amendment would not generate any point sources of wastewater or other liquid or solid water contaminants. All of the wastewater that would be generated would be discharged into a local sanitary sewer system that would convey the flows into Irvine Ranch Water District's (IRWD) regional wastewater collection and treatment system. Furthermore, potential impacts to San Diego Creek related to post-construction activities would be reduced to below a level of significance with implementation of LRDP EIR mitigation measures Hyd-2A and Hyd-2B, which requires preparation of an erosion control plan during the design phase and implementation of design features to prevent contaminants from entering the storm system for all project implementing the 2007 LRDP.

Therefore, in compliance with the storm water permits described above and implementation of LRDP EIR mitigation measures Hyd-2A and Hyd-2B, construction and post-construction impacts would be reduced to a less than significant level.

b) Groundwater: No Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

UCI does not use groundwater and instead is provided water by the IRWD. This issue was adequately addressed in the 2007 LRDP Initial Study and further analysis in the EIR was not required (LRDP EIR, page 4.7-27). Therefore, the proposed Verano 8 project and implementation of the LRDP Student Housing Amendment would not affect groundwater tables and no impact would occur. No mitigation is required.

c) Substantially Alter the Existing Drainage Pattern which would:

i) Result in Substantial Erosion or Siltation: Project Impact Adequately Addressed in the LRDP EIR

Verano 8 Graduate Student Housing

For the project site, features that control run-off volumes and durations to minimize or eliminate erosion and siltation would be depicted on final construction plans. Any slopes would be landscaped and energy dissipaters and other control devices would be incorporated as needed. Drainage control measures would be implemented during rough grading to ensure that discharge volumes and durations are controlled on newly graded channels. Standard construction strategies such as desiltation basins, rip-rap, sandbag chevrons, straw waddles, etc. would be incorporated into the project's SWPPP both during and after grading. Therefore, potential erosion or siltation impacts during and following construction would be reduced to less than significant level through compliance with the conditions of the General Construction Storm Water Permit and LRDP EIR mitigation measures Hyd-2A and Hyd-2B. Therefore, impacts due to erosion would be reduced to a less than significant level.

LRDP Student Housing Amendment

Earth-disturbing activities during construction of future projects that implement the LRDP Amendment that may result in soil erosion would be temporary. Campus projects would comply with the California Building Code (CBC), which regulates excavation and grading activities, and the National Pollutant Discharge Elimination System (NPDES) general permit for construction activities, which requires preparation of an erosion control plan and implementation of construction BMPs to prevent soil erosion. Such BMPs could include, but not limited to, silt fences, watering for dust control, straw-bale check dams, and hydroseeding. The LRDP EIR concluded that with implementation of these routine control measures potential construction-related erosion impacts would be less than significant (LRDP EIR, page 4.5-10).

Although future projects that implement the LRDP Amendment would increase impermeable surfaces throughout the campus, soil erosion is not anticipated to occur during operation. All future projects associated with the implementation of the LRDP Amendment would be analyzed at the project-level under CEQA. In the event that storm water runoff were to increase, velocities would be reduced to preexisting conditions to the extent feasible with the incorporation of LRDP EIR mitigation measures Hyd-2A and Hyd-2B. Therefore, with the incorporation of LRDP EIR mitigation measures Hyd-2A and Hyd-2B, impacts due to soil erosion would be reduced to a less than significant level.

ii) Substantially Increase the Rate of Surface Runoff and Result in Flooding: Project Impact Adequately Addressed in LRDP EIR

Verano 8 Graduate Student Housing

The Verano 8 project site was previously developed with an earlier Verano Place phase, which was previously demolished, and currently consists of mostly pervious surfaces. Construction of the proposed project would convert the site to mostly impervious surfaces increasing the rate and amount of runoff. To avoid significant flooding impacts on- or off-site, the proposed storm drain system would be designed in accordance with the drainage criteria set forth in the LRDP mitigation measures Hyd-1A and Hyd-2B. The drainage system would be built to maintain or reduce peak runoff from 25-year and 100-year storm events. Additional hydrological analysis would be conducted as part of the final design process to specify all primary and secondary drainage control facilities required to satisfy flood control criteria, as well as site design, mechanical, structural, and non-structural measures to filter pollutants from site runoff prior to discharge into the existing storm drain networks. Therefore, with implementation of LRDP EIR mitigation measures Hyd-1A and Hyd-2B, impacts to the alteration of the drainage pattern would be reduced to a less than significant level.

LRDP Student Housing Amendment

Land disturbing construction activities associated with implementation of the 2007 LRDP Amendment, such as grading and excavation of project sites and construction of new building foundations, roads, driveways, and trenches for utilities, could result in the localized alteration of drainage patterns. These alterations may result in the capacity of the storm drain facilities temporarily exceeding capacity, if substantial drainage is rerouted. Temporary ponding and/or flooding could also result from such activities, from temporary alterations of the drainage system (reducing its capacity of carrying runoff), or from the temporary creation of a sump condition due to grading. Alterations may temporarily result in erosion and siltation if flows were substantially increased or routed to facilities or channels without capacity to carry the flow. Under the NPDES permit program, SWPPPs are prepared and BMPs identified, which reduce the likelihood of alterations in drainage that would result in impacts. Implementation of appropriate BMPs, as part of compliance with construction permits for construction sites, would protect the quality of storm water runoff by controlling runoff and by ensuring that the quality of storm water flows meets the applicable requirements of the RWQCB. In addition, all construction sites are managed under the campus's Storm Water Management Plan in compliance with the Phase II regulations. Therefore, short-term impacts resulting from alterations of drainage and hydrology during construction would be less than significant.

Implementation of the LRDP Amendment would result in the construction of new buildings, redevelopment, landscaping, and other features on the UCI campus. These projects may result in minor alterations to existing drainage patterns of individual sites within the campus, but would not result in substantial alterations to the drainage courses of the campus as a whole. However, implementation of the LRDP Amendment would convert some areas of the campus from softscape to hardscape which could increase runoff from certain areas. However, all future projects associated with the implementation of the LRDP Amendment would be analyzed under CEQA at the project level, including a hydrology analysis during design. Therefore, in compliance with the NPDES permit and further project level analysis, impacts due to flooding due to surface rate increase would be reduced to a less than significant level. No mitigation is required.

iii) Exceed Capacity of Stormwater Drainage Systems: Project Impact Adequately Addressed in LRDP EIR

Verano 8 Graduate Student Housing

The site currently drains into local storm drains and catch basins before flowing into the existing

84-inch storm drain located at the northeast corner of the project site. This 84-inch line may be required to be relocated or bridged during construction and would be determined during the design phase. Storm drainage would be collected and treated on site through best management practices (BMPs), then conveyed to the existing 84-inch storm drain. Low impact development (LID) features, such as catch basins, may be implemented in compliance with UCI's MS4 permit to retain stormwater flows and would be determined during the final design phase

Due to the increase in impervious surfaces, additional runoff would be calculated during the design phase of the project and the collection system would be upgraded to increase capacity, if needed. The on-site drainage system, which may include on-site retention basins or LID features, would be designed to provide sufficient capacity to manage the level of water runoff anticipated upon completion of construction. Therefore, with implementation of Hyd-1A and Hyd-2B, impacts due to additional polluted runoff would be less than significant.

LRDP Student Housing Amendment

As discussed 4.9(c)(iii) above, implementation of the LRDP Amendment would result in the construction of new buildings, redevelopment, landscaping, and other features on the UCI campus. These projects may result in minor alterations to existing drainage patterns of individual sites within the campus, but would not result in substantial alterations to the drainage courses of the campus as a whole. However, implementation of the 2007 LRDP would convert some areas of the campus from softscape to hardscape which could increase runoff from certain areas. However, all future projects associated with the implementation of the LRDP Amendment would be analyzed under CEQA at the project level, including a hydrology analysis during design. Therefore, in compliance with the NPDES permit and further project level analysis, impacts due to flooding due to surface rate increase would be reduced to a less than significant level. No mitigation is required.

d) Seiche, Tsunami, or Mudflow: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

The campus is located approximately three miles from the Pacific Ocean where sufficient evacuation notice would be provided by the West Coast and Alaska Tsunami Warning Center in the occurrence of a tsunami. The campus is not located in an area with potential for seiche and is relatively flat, which is not conducive for mudflows (LRDP EIR, pages 4.7-24 through 25). Section 4.6, Geology and Soils, further addresses soil issues for the Verano 8 project site and the LRDP Amendment. Therefore, impacts due to exposure of people or structures to seiche, tsunami, or mudflow would be less than significant. No mitigation is required.

e) Conflict with a Water Quality Control Plan or Sustainable Groundwater Management Plan: No Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

Groundwater is not used on the campus as a source of water, thus, the project is not subject to the requirements of a groundwater management plan.

As described in responses provided above, the proposed Verano 8 project or future projects associated with the implementation of the LRDP Amendment would not be a substantial source of pollutants that would result in significant impacts to surface water or groundwater quality. Additionally, the proposed Verano 8 project and future projects associated with the implementation of the LRDP Amendment would implement and comply with the UCI Stormwater Management Plan (SWP)[1] as required by MS4 permit requirements under the Clean Water Act. All projects constructed on the campus are subject to review by the Office of Environmental Health and Safety, who ensure project compliance with the SWP and NPDES permit. Therefore, in compliance with the UCI SWP, the proposed Verano 8 project and the LRDP Amendment would not conflict with a water quality control plan or groundwater management plan and no impact would occur. No mitigation is required.

Mitigation Measures

Hyd-1A: As early as possible in the planning process of future projects that implement the 2007 LRDP and would result in land disturbance of 1 acre or greater, and for all development projects occurring on the North Campus in the watershed of the San Joaquin Freshwater Marsh, a qualified engineer shall complete a drainage study. Design features and other recommendations from the drainage study shall be incorporated into project development plans and construction documents. Design features shall be consistent with UCI's Storm Water Management Program, shall be operational at the time of project occupancy, and shall be maintained by UCI. At a minimum, all drainage studies required by this mitigation measure shall include, but not be limited to, the following design features:

Site design that controls runoff discharge volumes and durations shall be utilized, where applicable and feasible, to maintain or reduce the peak runoff for the 10-year, 6-hour storm event in the post-development condition compared to the pre-development condition, or as defined by current water quality regulatory requirements.

Measures that control runoff discharge volumes and durations shall be utilized, where applicable and feasible, on manufactured slopes and newly-graded drainage channels, such as energy dissipaters, revegetation (e.g., hydroseeding and/or plantings), and slope/channel stabilizers.

Hyd-2A: Prior to initiating on-site construction for future projects that implement the 2007 LRDP, UCI shall approve an erosion control plan for project construction. The plan shall include, but not be limited to, the following applicable measures to protect downstream areas from sediment and other pollutants during site grading and construction:

[1] https://www.ehs.uci.edu/programs/enviro/stormwater/UCI_StormWater_ManagementPlan.pdf. Accessed April 4, 2019.

- Proper storage, use, and disposal of construction materials.
- Removal of sediment from surface runoff before it leaves the site through the use of silt fences, gravel bags, fiber rolls or other similar measures around the site perimeter.
- Protection of storm drain inlets on-site or downstream of the construction site through the use of gravel bags, fiber rolls, filtration inserts, or other similar measures.
- Stabilization of cleared or graded slopes through the use of plastic sheeting, geotextile fabric, jute matting, tackifiers, hydro-mulching, revegetation (e.g., hydroseeding and/or plantings), or other similar measures.
- Protection or stabilization of stockpiled soils through the use of tarping, plastic sheeting, tackifiers, or other similar measures.
- Prevention of sediment tracked or otherwise transported onto adjacent roadways through use of gravel strips or wash facilities at exit areas (or equivalent measures).
- Removal of sediment tracked or otherwise transported onto adjacent roadways through periodic street sweeping.
- Maintenance of the above-listed sediment control, storm drain inlet protection, slope/stockpile stabilization measures.

Hyd-2B: Prior to project design approval for future projects that implement the 2007 LRDP and would result in land disturbance of 1 acre or more, the UCI shall ensure that the projects include the design features listed below, or their equivalent, in addition to those listed in mitigation measure Hyd-1A. Equivalent design features may be applied consistent with applicable MS4 permits (UCI's Storm Water Management Plan) at that time. All applicable design features shall be incorporated into project development plans and construction documents; shall be operational at the time of project occupancy; and shall be maintained by UCI.

- All new storm drain inlets and catch basins within the project site shall be marked with prohibitive language and/or graphical icons to discourage illegal dumping per UCI standards.
- Outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system shall be covered and protected by secondary containment.
- Permanent trash container areas shall be enclosed to prevent off-site transport of trash, or drainage from open trash container areas shall be directed to the sanitary sewer system.
- At least one treatment control is required for new parking areas or structures, or for any other new uses identified by UCI as having the potential to generate substantial

pollutants. Treatment controls include, but are not limited to, detention basins, infiltration basins, wet ponds or wetlands, bio-swales, filtration devices/inserts at storm drain inlets, hydrodynamic separator systems, increased use of street sweepers, pervious pavement, native California plants and vegetation to minimize water usage, and climate controlled irrigation systems to minimize overflow. Treatment controls shall incorporate volumetric or flow-based design standards to mitigate (infiltrate, filter, or treat) storm water runoff, as appropriate.

4.10 Land Use and Planning

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Physically divide an established community?					**X**
b) Cause a significant environmental impact with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?					**X**

Discussion

Land use and planning issues are discussed in Section 4.8 of the 2007 LRDP EIR.

a) Divide an Established Community: No Impact

Verano 8 Graduate Student Housing

The proposed Verano 8 project would construct graduate student housing and support uses that include a community center, parking structure, and a maintenance and operations facility within the East Campus. Surrounding uses include the Early Childhood Center, Infant Toddler Centers I and II, and California Avenue to the east; Adobe Circle South and Puerta del Sol student housing to the north; previous Verano Place student housing phases and Adobe Circle South to the south; and Verano Road South and previous Verano Place student housing phases to the west. The addition of graduate student housing and its support uses would be consistent with existing adjacent uses, which is predominantly student housing.

The proposed project would not affect the land use pattern of the surrounding community, either on- or off-campus. No existing bikeways, roadways, or driveways would be removed as part of the project. New pedestrian walkways would be constructed to increase connectivity from the project site to the existing surrounding student housing, the new parking structure, and California Avenue. Therefore, the proposed project would not divide an established community and no impact would occur. No mitigation is required.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core from Academic and Support to Student Housing and a 12-acre parcel within the West Campus from Student Housing to Academic and Support. Increasing student housing density within the Academic Core and East Campus would not result in the divide of an established community, as both areas are the location of previously existing student housing, undergraduate and graduate, on the campus.

In the Academic Core, changing the land use of the six-acre parcel from Academic and Support to Student Housing would not result in a significant change to the site or the surrounding community. The site is currently developed as the Campus Village student housing. This proposed land use change within the LRDP Amendment would change the land use designation to Student Housing of half of Campus Village in order for it to be redeveloped at a higher housing density, while the remaining half of Campus Village would retain its land use designation of Academic and Support and would be ultimately redeveloped into academic space as part of future projects. Both Student Housing and Academic and Support land uses are consistent with the surrounding uses in the Academic Core, which is predominantly built-out with academic space and student housing.

For the 12-acre parcel in the West Campus, changing the land use from Student Housing to Academic and Support would not divide the community. The surrounding areas already consist of campus support uses, such as Environmental Health and Safety, Electrical Substation, Maintenance Building, and Building Services. Therefore, due to the consistency of the surrounding uses to the areas proposed for the land use change, the LRDP Student Housing Amendment would not divide an established community and no impact would occur. No mitigation is required.

b) Conflict with an Applicable Land Use Plan, Policy, or Regulation: No Impact

Verano 8 Graduate Student Housing

As discussed in Section 2.0, Project Description, the applicable land use plan is the 2007 LRDP and the University is the only agency with land use jurisdiction over projects located on the campus. The project site is designated as Student Housing in the LRDP, which allows for graduate student housing and support uses, which include the parking structure, community center, and maintenance and operations facility. Furthermore, the project scope of approximately 1,200 new beds is within the total bed count in the 2007 LRDP and analyzed in the LRDP EIR.

In addition, the proposed project would comply with the UC Sustainable Practices Policy and the Climate Action Plan (2016 Update). Refer to Section 4.6, Greenhouse Gas Emissions, for a detailed analysis regarding the project's compliance. Therefore, the proposed project would not conflict with the LRDP or any other applicable plan adopted to mitigate environmental effects and no impact would occur. No mitigation is required.

LRDP Student Housing Amendment

The applicable land use plan for the campus is the 2007 LRDP and the University is the only agency with land use jurisdiction over projects located on the campus. As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, the six-acre parcel within the Academic Core and the 12-acre parcel within the West Campus. However, with the adoption of the LRDP Student Housing Amendment as currently proposed and analyzed within this document, then subsequent future development projects that implement the LRDP Amendment would be consistent. No additional physical changes would result due to the LRDP Amendment, including no changes would occur to academic building capacities or increases in student or staff/faculty population capacities. Therefore, the LRDP Amendment would not conflict with an applicable land use plan adopted for the purpose of mitigating an environmental effect and impacts would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.11 Noise

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:					
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies?		**X**			
b) Generation of excessive groundborne vibration or groundborne noise levels?		**X**			
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?					**X**

Discussion

Noise issues are discussed in Section 4.9 of the 2007 LRDP EIR.

a) Noise Standards: Project Impact Adequately Addressed in the LRDP EIR

Verano 8 Graduate Student Housing

Project construction is projected to require conventional construction techniques and standard equipment such as scrapers, graders, backhoes, loaders, tractors, cranes, and miscellaneous trucks. Specialized construction activities that generate unusually loud and repetitive noise such as pile driving would not be required to complete the project. A range of truck types would be required to transport machinery, supplies, remove waste materials, etc. on- and off-site during project construction. The heaviest of these trucks would likely be required during the grading phase; however, construction-related truck traffic would comply with the City of Irvine's Designated and Restricted Truck Routes.

As indicated in the LRDP EIR, the project would generate noise that could expose nearby receptors to elevated noise levels during its approximately 26-month construction period. The magnitude of the impact would depend on the type and duration of the activity, type of construction equipment used, distance between the noise source and receiver, and intervening structures, topography, and barriers. Noise generated by the types of construction equipment listed above would range from 60 to 90 dBA at 50 feet from the source and propagates as a point source that decays at a rate of 6 dB per doubling of distance from the source. Project construction activities would be expected to be audible in the immediate area (LRDP EIR, page 4.9-32). Therefore, LRDP EIR mitigation measure Noi-2A would limit construction operations to daytime hours, require proper equipment maintenance and muffling devices, and place restrictions on weekend construction activities, which would reduce temporary noise impacts to a less than significant level.

The proposed project would construct new apartment buildings, community center, parking structure, and a maintenance and operation facility adjacent to existing development of similar use. For operation of the project, existing ambient noise sources in the immediate vicinity of the project site include vehicular traffic from the parking structure, surface parking, California Avenue, Adobe Circle South, Verano Road South, and pedestrian traffic. As discussed in Section 4.14, Transportation and Traffic, due to the relatively small volume of traffic expected to be associated with the AM and PM peak trips of the project (104 AM peak trips and 133 PM peak trips), related traffic noise is not expected to result in substantial permanent increase in ambient noise levels in the project vicinity. Noise associated with indoor activities of a residential building would be similar to the existing uses surrounding the project site, which includes student housing and childcare facilities. Noise generated by mechanical equipment (air conditioning/heating) would not be audible beyond the project site with typical sound attenuation features to be included in the project design. Therefore, impacts to permanent ambient noise levels would less than significant.

Additionally, the LRDP EIR uses the State of California Land Use Compatibility for Community Noise Environment to address potential noise impacts (page 4.9-7). Multi-family residential uses have a "normally acceptable" range of 50 to 65 dB CNEL. As discussed above and in the 2007 LRDP EIR, the primary increase in noise levels on- and off-campus would be through the increase in traffic (page 4.9-24). Table 4.9-4 in the 2007 LRDP FEIR provides the existing traffic noise levels and estimated LRDP buildout noise levels along roadway segments throughout the campus. The nearest roadway segments to the project site, Adobe Circle North and Adobe Circle South, have an estimated 52 dBA CNEL and 49 dBA CNEL, respectively, at 50 feet from the centerline at

LRDP buildout, which is well within the 50 to 65 dB CNEL range for multi-family residential uses.

Therefore, with implementation of LRDP mitigation measure Noi-2A, which would reduce potential noise impacts during construction, the proposed project would not conflict with a noise standard.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core and a 12-acre parcel within the West Campus.

Construction of future student housing projects and associated facilities is projected to require conventional construction techniques and standard equipment such as scrapers, graders, backhoes, loaders, tractors, cranes, and miscellaneous trucks. A range of truck types would be required to transport machinery, supplies, remove waste materials, etc. on- and off-site during project construction. The heaviest of these trucks would likely be required during the grading phase; however, construction-related truck traffic would comply with the City of Irvine's Designated and Restricted Truck Routes.

Future projects that implement the LRDP Amendment would generate noise that could expose nearby receptors to elevated noise levels during the construction period. The magnitude of the impact would depend on the type and duration of the activity, type of construction equipment used, distance between the noise source and receiver, and intervening structures, topography, and barriers. Noise generated by the types of construction equipment listed above would range from 60 to 90 dBA at 50 feet from the source and propagates as a point source that decays at a rate of 6 dB per doubling of distance from the source. Project construction activities would be expected to be audible in the immediate area (LRDP EIR, page 4.9-32). Therefore, LRDP EIR mitigation measure Noi-2A would limit construction operations to daytime hours, require proper equipment maintenance and muffling devices, and place restrictions on weekend construction activities, which would reduce temporary noise impacts to a less than significant level.

Future projects that implement the LRDP Amendment would be student housing and associated support uses, such as, but not limited to, parking facilities, maintenance facilities, utility plants, and roadways, that could generate excessive noise during operation, which would be analyzed within a project-level CEQA document. Additionally, with implementation of LRDP EIR mitigation measures Noi-1A and Noi-1B, which requires adherence to State noise standards for noise-sensitive land uses (i.e., student housing) and ensure that the design of stationary noise sources (e.g., parking structures) are designed to minimize exposure of noise-sensitive land uses, it would reduce operational noise impacts to a less than significant level.

Therefore, with implementation of LRDP EIR mitigation measures Noi-1A, Noi-1B, and Noi-2A, impacts due to excessive construction and operational noise levels would be reduced to a less than significant level.

b) Groundborne Vibration: Project Impact Adequately Addressed in the LRDP EIR

Verano 8 Graduate Student Housing

The long-term operation of the proposed project would not involve railroads or substantial heavy truck operations that would generate ground-borne vibration that could be felt at surrounding uses. Therefore, the proposed project would not cause long-term vibration impacts at surrounding uses and no impact would occur.

As stated in Section 2.0, Project Description, construction of the proposed project would require the use of demolition equipment. Construction may create a nuisance level of vibration-generated noise to existing sensitive receivers in the surrounding area, specifically the child care facilities and student housing. No vibration sensitive instruments or operations used as part of campus research or clinical operations are located in proximity of the project site. Therefore, with implementation of LRDP EIR Noi-2A, which implements standard construction noise measures, impacts due to groundborne vibration would be reduced to a less than significant level.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core and a 12-acre parcel within the West Campus. Housing projects associated with the implementation of the LRDP Amendment could cause impacts from ground-borne vibration during project construction that could result in human annoyance, structural damage, or disruption of vibration-sensitive instruments or operations used in research or clinical uses. Therefore, with implementation of LRDP EIR mitigation measures Noi-2A and Noi-4A, which would implement standard construction noise measures and require a vibration mitigation program for any projects sited within 100-feet of a vibration-sensitive use, impacts due to groundborne vibration would be reduced to a less than significant level.

c) Private Airstrips and Public Airport Noise: No Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

No private airstrips are located in the vicinity of the campus. As discussed in the 2007 LRDP EIR (page 4.9-33), the nearest airport's (John Wayne) 60 CNEL contour[1] does not extend to the UCI campus. Therefore, the proposed project would not be subject to aircraft noise in excess of regulatory limits and no impact would occur. No mitigation is required.

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[1] https://www.ocair.com/reportspublications/AccessNoise/cnelnoisecontours/2017.pdf. Accessed June 6, 2019.

Mitigation Measures

LRDP EIR Noi-1A: Prior to project design approval for future projects that implement the 2007 LRDP and include noise-sensitive land uses (i.e., campus housing, classrooms, libraries, and clinical facilities), UCI shall ensure that the project design will adhere to the following state noise standards: 60 dBA CNEL (single-family campus housing); 65 dBA CNEL (multi-family campus housing, dormitories, lodging); and 70 dBA CNEL (classrooms, libraries, clinical facilities). Applicable project design features may include, but are not limited to, the following:

i. Specific window treatments, such as dual glazing, and mechanical ventilation when the 45 dBA CNEL limit within habitable rooms and the 50 dBA CNEL limit within classrooms can only be achieved with a closed window condition.

ii. Setbacks; orientation of usable outdoor living spaces, such as balconies, patios, and common areas, away from roadways; and/or landscaped earthen berms, noise walls, or other solid barriers.

LRDP EIR Noi-1B: As early as possible in the planning process of future projects that implement the 2007 LRDP and would include new or modified stationary noise sources such as utility plant facilities (constant noise source), major HVAC systems (constant noise source), and parking structures (constant and/or intermittent noise source), UCI shall ensure they are designed in a manner that would minimize the exposure of noise-sensitive land uses (i.e., campus housing, classrooms, libraries, and clinical facilities) to noise levels that exceed the following state noise standards: 60 dBA CNEL (single-family campus housing); 65 dBA CNEL (multifamily campus housing, dormitories, lodging); and 70 dBA CNEL (classrooms, libraries, clinical facilities). If the affected noise-sensitive land uses are already exposed to noise levels in excess of these standards, then the new or modified stationary noise sources shall not increase the ambient noise level by more than 3 dBA. These criteria shall be achieved by:

i. Implementing the following noise reduction measures into the design of the satellite utilities plant, as applicable:

- Use low-speed fans, baffles, mufflers, or other mechanical system design features to reduce emitted noise;
- Increase the distance from the noise source to sensitive receptors with setbacks;
- Place equipment inside buildings or within solid enclosures;
- Construct earthen berms, noise walls, or other solid barriers for noise attenuation;
- Eliminate glass, louvers, openings, or vents in the exterior walls of the plant, particularly those facing noise-sensitive land uses. If openings are necessary, install acoustical louvers or baffles on project components at all exterior openings;
- Install silencers on the intake and exhaust system;

- Place cooling towers as close to plant buildings as possible to utilize the buildings as noise barriers; and
- Install integrated noise barriers on the sides of cooling towers.

ii. Implementing the following noise reduction measures into the design of new major HVAC systems, as applicable:

- Install acoustical shielding (parapet wall or near-field noise barrier) around all new equipment; and
- Place equipment below grade in basement space.

iii. Implementing the following noise reduction measures into the design of new parking structures: • Incorporate architectural design features that attenuate noise including solid panels at locations facing noise-sensitive land uses; and • Construct earthen berms, noise walls, or other solid barriers between noisesensitive land uses and parking structures.

LRDP EIR Noi-2A: Prior to initiating on-site construction for future projects that implement the 2007 LRDP, UCI shall approve contractor specifications that include measures to reduce construction/demolition noise to the maximum extent feasible. These measures shall include, but are not limited to, the following:

i. Noise-generating construction activities occurring Monday through Friday shall be limited to the hours of 7:00 am to 7:00 pm, except during summer, winter, or spring break at which construction may occur at the times approved by UCI.

ii. Noise-generating construction activities occurring on weekends in the vicinity of (can be heard from) off-campus land uses shall be limited to the hours of 9:00 am to 6:00 pm on Saturdays, with no construction occurring on Sundays or holidays.

iii. Noise-generating construction activities occurring on weekends in the vicinity of (can be heard from) on-campus residential housing shall be limited to the hours of 9:00 amto 6:00 pm on Saturdays, with no construction on Sundays or holidays. However, as determined by UCI, if on-campus residential housing is unoccupied (during summer, winter, or spring break, for example), or would otherwise be unaffected by construction noise, construction may occur at any time.

iv. Construction equipment shall be properly outfitted and maintained with manufacturer recommended noise-reduction devices to minimize construction-generated noise.

v. Stationary construction noise sources such as generators, pumps or compressors shall be located at least 100 feet from noise-sensitive land uses (i.e., campus housing, classrooms, libraries, and clinical facilities), as feasible.

vi. Laydown and construction vehicle staging areas shall be located at least 100 feet from noise-sensitive land uses (i.e., campus housing, classrooms, libraries, and clinical facilities), as feasible.

vii. All neighboring land uses that would be subject to construction noise shall be informed at least two weeks prior to the start of each construction project, except in an emergency situation.

viii. Loud construction activity such as jackhammering, concrete sawing, asphalt removal, pile driving, and large-scale grading operations occurring within 600 feet of a residence or an academic building shall not be scheduled during any finals week of classes. A finals schedule shall be provided to the construction contractor.

LRDP EIR Noi-4A: Prior to initiating on-site construction for future projects that implement the 2007 LRDP and are located within 100 feet of vibration-sensitive uses (i.e., buildings containing vibrationsensitive instruments or operations, or buildings that are considered vibration sensitive due to their age, construction type and/or fragile condition), UCI shall approve a construction vibration mitigation program as part of the contractor specifications that includes measures to reduce vibration resulting from construction activities to the maximum extent practicable. The program shall include measures to establish baseline vibration conditions, vibration monitoring, work methods or equipment necessary to reduce vibration, and a pre-construction notification process for impacted building occupants (six-month and one-month interval prior to construction).

4.12 Population and Housing

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X	
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X	

Discussion

Population and housing issues are discussed in Section 4.10 of the 2007 LRDP EIR.

a) Induce Substantial Unplanned Population Growth: Less than Significant Impact

Verano 8 Graduate Student Housing

The proposed project, as described in Section 2.0, Project Description, would construct approximately 1,200 graduate student beds within approximately four buildings, a community center, a 1,000-space parking structure, and a maintenance and operations facility. In order to operate the proposed project, it is anticipated approximately five new staff would be hired, which is significantly less than 0.1 percent of the existing on-campus population. The proposed housing would be for existing students and would not directly increase enrollment.

Additionally, the five new staff proposed to be hired and the approximately 1,200 student beds to be constructed are within the total faculty and staff population and student housing capacities analyzed within the 2007 LRDP EIR, which found that implementation of the 2007 LRDP would not result in significant impacts due to population growth.

Therefore, because the proposed project is consistent with the 2007 LRDP and the LRDP EIR, it would not substantially induce unplanned population growth and impacts would be less than significant. No mitigation is required.

LRDP Student Housing Amendment

As described in Section 2.0, Project Description, the LRDP Amendment would increase the overall student housing capacity on the campus from 17,637 beds to 22,000 beds and change the land use designation at two sites on the campus, the six-acre parcel in the Academic Core from Academic and Support to Student Housing and the 12-acre parcel in the West Campus from Student Housing to Academic and Support. However, no changes to student enrollment or the Academic and Support square footage capacity that was previously analyzed in the 2007 LRDP EIR would occur.

With the construction of additional student housing, a small amount of staff would be hired to operate the new housing facilities. As discussed above in the Verano 8 Graduate Student Housing project, approximately five additional staff would be hired to operate the 1,200-bed project. As such, the LRDP Amendment is proposing to increase overall student beds on the campus from 17,637 beds to 22,000 beds, for a total increase of 4,363 beds. Based on proportion (5 staff multiplied by 4,363 beds and divided by 1,200 beds), it can be assumed that approximately 19 additional staff would be hired with the implementation of the LRDP Amendment. This is significantly less than 0.1 percent of the existing on-campus population and within the faculty and staff population capacity previously analyzed in the 2007 LRDP EIR. Therefore, the LRDP Amendment would not substantially induce unplanned population growth and impacts would be less than significant.

b) Displace Existing People or Housing: Less than Significant Impact

Verano 8 Graduate Student Housing

No existing housing would be demolished during construction. Therefore, the proposed project would not displace people or housing that would require the construction of replacement housing elsewhere and no impact would occur. No mitigation is required.

LRDP Student Housing Amendment

Implementation of the LRDP Amendment would demolish existing student housing within the Academic Core and East Campus. However, as part of the goal of increasing student housing capacity from 17,637 beds to 22,000 beds, after demolition these sites would be redeveloped with more student housing built at a significantly higher density. Although the LRDP Amendment would demolish existing housing, it would be replace it at a higher ratio; therefore, impacts due to displacement of people or housing would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.13 Public Services

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:					
a) Fire protection?				**X**	
b) Police protection?				**X**	
c) Schools?				**X**	
d) Parks?				**X**	
e) Other public facilities?				**X**	

Discussion

Public services issues are discussed in Section 4.11 of the 2007 LRDP EIR.

a) Fire Protection: Less than Significant

<u>*Verano 8 Graduate Student Housing and LRDP Student Housing Amendment*</u>

Fire protection and emergency response services to the campus are provided by the Orange County Fire Authority (OCFA). The primary responder serving the campus, OCFA Fire Station #4, is located north of the campus on the corner of California and Harvard Avenues. Of the station's calls, UCI generated 923 calls, or approximately 38%, during 2016. According to an analysis conducted by OCFA in November 2006, this station had adequate capacity to accommodate existing demand on the main campus. Built in 1966, the station has no current plans for its expansion (LRDP EIR, page 4.11-6).

As discussed in Section 4.11, Population and Housing, the proposed Verano 8 project would hire approximately five new staff members and would serve the existing on-campus student population. Full implementation of the LRDP Amendment, which would construct an additional 4,363 beds on campus, would result in approximately 19 new staff members to be hired.

Implementation of the LRDP Amendment would result in an increase in the amount of student beds located on the campus, but no changes to campus populations or other building capacity envelopes would occur. Student enrollment levels would not increase beyond what was analyzed in the 2007 LRDP and its associated EIR. These students would already be on campus for classes, but would increase the number of those students living on the campus, which could result in additional demand for fire services. These students, however, would be living in nearby housing communities within the City of Irvine. With the construction of future student housing projects that implement the LRDP Amendment, it would transfer the students living in adjacent off-campus communities to the campus itself. Therefore, additional demand for public services beyond what was already anticipated within the area surrounding the campus would be minimal. Furthermore, the project site is located within a five travel minute coverage area by OCFA. In 2016, the average response time to UCI was six minutes and 56 seconds, which is within the standard adopted by OCFA, where a unit should be on-site within seven minutes and 20 seconds for 80 percent of emergency calls.[1] Therefore, the proposed Verano 8 project and future projects that implement the LRDP Amendment would not require the need for new fire protection facilities and impacts to services would be less than significant. No mitigation is required.

b) Police Protection: Less than Significant

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

The UCI Police Department (UCIPD) is located in the Public Services building on the East Campus approximately one-half mile northeast of the project site. The UCIPD provides all police services (all patrol, investigation, crime prevention education, and related law enforcement duties) for the campus (LRDP EIR, page 4.11-3).

As discussed in Section 4.11, Population and Housing, the proposed Verano 8 project and future projects that implement the LRDP Amendment would not increase student enrollment beyond what was planned for in the 2007 LRDP and analyzed in its EIR, and would not result in a significant increase in demand for police services. Furthermore, there are no current plans to expand or construct additional police facilities on the campus. Therefore, the proposed project would not require the construction of new police facilities and impacts to services would be less than significant. No mitigation is required.

c) Schools: Less than Significant

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

The Irvine Unified School District (IUSD) provides kindergarten through grade 12 (k-12) public education services for school age children residing on or near the UCI campus. As discussed above and in Section 4.11, Population and Housing, the proposed Verano 8 project and LRDP

[1] http://www.ocfa.org/Uploads/Orange%20County%20Fire%20Authority%20SOC_FINAL.pdf. Accessed March 24, 2019.

Amendment would not increase student enrollment beyond what was planned for in the 2007 LRDP and analyzed in its EIR. As discussed in 4.13(a) above, the construction of additional student housing would bring students living in nearby off-campus housing communities to live on the campus, and therefore, additional demand on school services for the area would be minimal to none. Therefore, the proposed project would not require the need for new off-campus educational facilities and impacts to services would be less than significant. No mitigation is required.

d) Parks: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

As discussed in Section 4.11, Population and Housing, the proposed Verano 8 project and LRDP Amendment would not increase student enrollment beyond what was planned for in the 2007 LRDP and analyzed in its EIR. Existing on-campus recreational facilities located throughout the campus, including Aldrich Park, Crawford Athletics Complex, and the Anteater Recreation Center have sufficient capacity to support the project and potential future projects associated with the implementation of the LRDP Amendment and would not require the construction of new park facilities. Therefore, impacts to parks would be less than significant. No mitigation is required.

e) Other Public Facilities: Less than Significant

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

As discussed above and in Section 4.11, Population and Housing, the proposed Verano 8 project and LRDP Amendment would not increase student enrollment beyond what was planned for in the 2007 LRDP and analyzed in its EIR. Furthermore, public facilities, such as libraries, exist on-campus and would not result in the need for the construction of new facilities within the surrounding community. Therefore, impacts to other public facilities would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.14 Recreation

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X	
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?				X	

Discussion

Recreation issues are discussed in Section 4.12 of the 2007 LRDP EIR.

a) Physically Deteriorate Existing Facilities: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

As discussed in Section 4.11, Population and Housing, the proposed Verano 8 project and the LRDP Student Housing Amendment would not substantially increase staff populations (approximately five and 19 new staff members, respectively) and would not result in an increase in any other populations on the campus (i.e., student, faculty, off-campus users). Therefore, construction of the proposed Verano 8 project and implementation of the LRDP Student Housing Amendment would not result in accelerated deterioration of recreational uses on or off-campus. In addition, campus and community populations have access to on-campus recreational facilities, including the Anteater Recreation Center (ARC), Aldrich Park, and Crawford Athletics Complex. The 2007 LRDP EIR assumed that the current level of maintenance of campus recreational facilities would continue and that substantial facility deterioration would not occur (page 4.12-5). Therefore, impacts to existing recreational facilities would be less than significant. No mitigation is required.

b) Construction of Recreational Facilities: Less than Significant

Verano 8 Graduate Student Housing

The proposed project would construct approximately four apartment buildings, a community center, a parking structure, a maintenance and operations facility, driveways, and pedestrian walkways on the project site. No recreational facilities are included in the project scope. Additionally, the proposed project would not directly induce unplanned population growth and would not require the construction of new or expansion of existing recreational facilities. Therefore, no impacts due to construction or expansion of recreational facilities as a result of the project would occur. No mitigation is required.

LRDP Student Housing Amendment

Implementation of the LRDP Student Housing Amendment could include construction and expansion of additional recreational facilities on the campus. However, as discussed in Section 2.0, Project Description, potential future projects associated with the implementation of the LRDP Student Housing Amendment would require additional CEQA review prior to project approval. As a project is designed, LRDP and/or project-specific mitigation measures, if needed, would be applied to address any potential project-specific impacts that could result due to the construction of recreational facilities, including aesthetics, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, transportation, tribal cultural resources, utilities and service systems, and wildfire. Therefore, with subsequent CEQA review, implementation of the LRDP Student Housing Amendment would not result in construction of recreational facilities that would have an adverse effect on the environment and impacts would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.15 Transportation

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				**X**	
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?		**X**			
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?					**X**

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X	
e) Result in inadequate emergency access?		X			
f) Conflict with adopted policies plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?					X

Discussion

Transportation and traffic issues are discussed in Section 4.13 of the 2007 LRDP EIR, which is based on the traffic study prepared by Austin-Foust Associates, Inc. (now Stantec Consulting Services, Inc.) in 2007. In addition, a 2019 project-level study was prepared by Stantec Consulting Services, Inc. and is included as Appendix C.

Changes to the Transportation thresholds were included in the 2018 CEQA Guidelines Update, which became effective on December 28, 2018. With the adopted changes, vehicle miles traveled (VMT) is determined to be the most appropriate metric to evaluate a project's transportation impacts and compliance is required after the grace period ends on July 1, 2020. Currently, the City of Irvine has not yet adopted VMT thresholds and the University is currently evaluating VMT models and data. As such, this Transportation section uses the Level of Service (LOS) metric for traffic conditions to analyze impacts.

a) Performance of the Circulation System: Less than Significant Impact

Verano 8 Graduate Student Housing

Roadways

Trip generation rates for proposed Verano 8 project were derived from the MCTM and are based on a up to 75 percent vehicle ownership factor for graduate students, which is based on parking permit take rates obtained from UCI's Office of Transportation and Distribution Services. Table 4.15-1 summarizes the estimated trip generation for the proposed Verano 8 project, which would generate approximately 1,854 daily trips with 104 AM peak hour trips and 133 PM peak hour trips.

The proposed project would demolish an approximately 6,000 GSF facility (6 TSF). For trip generation purposes, the net new support services would be of 4,500 GSF (4.5 TSF), which would generate approximately 54 daily trips with four AM peak hour trips and five PM peak hour trips.

The 2007 LRDP designated the proposed Verano 8 project site for student housing. Traffic volumes that corresponds with the current LRDP land use is shown in this report under LRDP Buildout No Project conditions. Compared with the land use assumptions in the current LRDP for the project site, the proposed Verano 8 project would generate 142 fewer daily trips, and 9 fewer trips during the AM and PM peak hour.

Table 4.15-1
Proposed Verano 8 Project Trip Generation Summary

Land Use	Amount	Units	AM Peak Hour			PM Peak Hour			
			In	Out	Total	In	Out	Total	ADT
Trip Rates									
Graduate Housing[2]	BED		0.008	0.050	0.058	0.069	0.042	0.111	1.500
Support	TSF		0.762	0.190	0.952	0.381	0.762	1.143	12.000
Trip Generation – Verano 8									
Graduate Housing	1200	BED	9	95	104	83	50	133	1,800
Net New Support (see below)	4.5	TSF	3	1	4	2	3	5	54
Total			12	96	104	85	53	133	1,854
Support Trips[1]									
Existing Support	6	TSF	5	1	6	2	5	7	72
New Support	10.5	TSF	8	2	10	4	8	12	126
Net Increase in Support Trips			3	1	4	2	3	5	54
LRDP Buildout									
Current LRDP TAZ 62/85	2521 BED/15 TSF		31	203	234	179	117	296	3,962
TAZ 62/85 with Project	2427 BED/15 TSF		30	195	225	173	114	287	3,820
Total Buildout Adjustment			-1	-8	-9	-6	-3	-9	-142

Source: UCI Main Campus Traffic Model (MCTM)
[1] The existing maintenance and operations facility would be replaced by a new facility
[2] Assumes graduate student permit take rate of 0.75 ADT = average daily trips
TSF = thousand square feet

Trip Distribution

Trips generated by the project would primarily use Campus Drive and California Avenue for access to and from the project site. The trip distribution was determined using ITAM. Approximately 56 percent of project trips are oriented towards north on California Avenue, of which 16 percent are oriented to the west on Campus Drive, 20 percent to the east on Campus Drive that continue along north on Culver Drive, and 20 percent continue north on California Avenue to Harvard Avenue. Forty-four percent of the project trips are oriented towards south on California Avenue, of which eight percent of project trips are oriented west on Anteater Drive towards Bison Avenue, and 36 percent of project trips are oriented toward Culver Drive/Bonita Canyon Drive to the south via Vista Del Campo or Anteater Drive.

Existing Plus Project Conditions

Existing plus Project peak hour volumes were obtained by adding the project-generated peak hour trips to the existing intersection turning movement volumes at the study intersections. The Existing conditions and Existing plus Project conditions levels of service (LOS) are based on existing lane configurations summarized in Table 4.15-2.

Table 0-2
Existing Plus Project Intersection LOS Summary

Description	Jurisdiction	Existing				Existing + Project			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		ICU/ Delay	LOS	ICU/ Delay	LOS	ICU/ Delay	LOS	ICU/ Delay	LOS
ICU Methodology - Signalized Intersections									
1. California & Campus	Irvine	0.34	A	0.49	A	0.35	A	0.52	A
4. California & Adobe Circle S	UCI	0.23	A	0.33	A	0.28	A	0.35	A
HCM Methodology - Stop-Controlled Intersections									
2. California & Adobe Circle N	UCI	9.4	A	11.2	B	9.4	A	11.5	B
3. California & Arroyo	UCI	9.5	A	19.6	C	9.8	A	22.5	C
5. California & Anteater	UCI	11.8	B	14.3	B	12.3	B	14.9	C
For stop-controlled intersections, delay is shown in seconds									

As Table 4.15-2 shows, the signalized study intersection continues to have an ICU that corresponds to LOS A with the addition of project traffic, and the stop-controlled intersections continue to operate at LOS C or better during the AM and PM peak hours. Therefore, the proposed Verano 8 project would have a less than significant impact on the on-campus and off-campus study intersections. No mitigation is required.

LRDP Buildout No Project Conditions

The 2007 LRDP Traffic Study assumes student housing growth on the project site. For the long-range baseline setting, buildout of the current 2007 LRDP is assumed. The long-range baseline volumes for this analysis were obtained from the UCI MCTM and ITAM. Buildout volumes for on-campus intersections came from the MCTM, and volumes for the off-campus intersection was obtained from ITAM Version 15, Buildout Approved Scenario. Forecast volumes from the MCTM were factored to the ITAM forecasts.

Table 4.15-3 summarizes the LOS for intersections under LRDP Buildout No Project conditions. The 2007 LRDP shows that the intersection of California Avenue at Arroyo Drive would be signalized in the future. The intersection of California Avenue at Adobe Circle North and the intersection of California Avenue at Anteater would remain stop-controlled under LRDP buildout conditions. Under LRDP Buildout No Project conditions, with the above assumptions, all study intersections would operate at LOS C or better during the AM and PM peak hours based on the LRDP Traffic Study.

LRDP Buildout with Project Conditions

Table 4.15-3 summarizes the LRDP Buildout without Project and with Project LOS for the study intersections.

The intersection of California Avenue and Anteater Drive would operate at LOS C during the AM and PM peak hour under conditions without and with the proposed project. All other study intersections would operate at LOS B or better during the AM and PM peak hours under buildout conditions with the addition of the proposed project.

The study intersections would operate at acceptable LOS under long range conditions. Therefore, impacts of traffic due to the LRDP buildout plus the proposed project would be less than significant. No mitigation is required

Table 0-3
LRDP Buildout Conditions Intersection LOS Summary

Description	Juris-diction	LRDP Buildout No Project				LRDP Buildout With Project			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		ICU/ Delay	LOS	ICU/ Delay	LOS	ICU/ Delay	LOS	ICU/ Delay	LOS
ICU Methodology - Signalized Intersections									
1. California & Campus	Irvine	0.56	A	0.70	B	0.55	A	0.70	B
3. California & Arroyo	UCI	0.51	A	0.67	B	0.50	A	0.66	A
4. California & Adobe Circle S	UCI	0.52	A	0.66	A	0.51	A	0.66	A
HCM Methodology - Stop-Controlled Intersections									
2. California & Adobe Circle N	UCI	10.3	B	12.3	B	10.2	B	12.3	B

5. California & Anteater	UCI	16.6	C	23.0	C	16.6	C	22.9	C
For stop-controlled intersections, delay is shown in seconds									

LRDP Student Housing Amendment

Housing Amendment Trip Generation

The proposed LRDP Amendment would increase the total student bed capacity to 22,000 beds, an increase of 4,363 beds, that would be a mix of undergraduate and graduate housing Trip generation estimates are shown in Table 4.15-4. The trip generation rates applied in the trip generation estimates are taken from the UCI MCTM.

The trip generation summaries also include trip generation estimates based on socioeconomic trip generation rates that are applied in the City of Irvine's ITAM 15 traffic model. Table 4.15-4 summarizes the trip generation estimates for the proposed increase in student housing per the Housing Amendment.

Housing Amendment Trip Distribution

For the purposes of analyzing the potential off-site traffic impacts, trip distribution patterns for the project were developed using the Buildout Approved ITAM network. A select zone run was conducted to identify the distribution of the trips generated by the proposed LRDP Amendment. AM and PM peak hour project trip distribution patterns based on the buildout with-project ITAM 15 model run are presented.

Housing Amendment Study Area

By increasing the student housing capacity, traffic volumes would be reduced overall due to more students living on campus, which would result in fewer commuters. The traffic study area therefore accounts for the change in travel patterns resulting from having more students living on campus.

As previously described above, a select zone run was conducted to identify the distribution of the trips generated by the increase in student housing. A focused study area was identified from the select zone run. The study area from the original 2007 LRDP Traffic Study was used and focused to where the proposed Housing Amendment adds 34 peak hour trips to the intersection (1,700 vehicles/per/lane saturation flow rate multiplied by 2 percent from the performance impact criteria). For the AM peak hour, this translates to a threshold of 7.8 percent project trip distribution (34/434) and 9.6 percent in the PM peak hour (34/351). These thresholds apply to the City of Irvine intersections.

For intersections in the City of Newport Beach, the focused study area includes intersections where the proposed Housing Amendment adds 16 peak hour trips to the intersection (1,600 vehicles/per/lane saturation flow rate multiplied by 1 percent from the performance impact criteria). For the AM peak hour, this translates to a threshold of 3.7 percent project trip distribution (16 trips/429 total AM peak hour trips) and 4.4 percent in the PM peak hour (16 trips/361 total PM peak hour trips).

Arterial Roadway Impact Analysis

Per the City of Irvine requirements, an arterial V/C analysis was conducted. The Long-Range Interim Year Approved With Project conditions V/C analysis is summarized in Table 4.15-5. The Arterial Roadway V/C analysis is summarized in Table 4.15-6.

The V/C analysis under the Long-Range Interim Year Approved conditions and Buildout Approved conditions show that the proposed LRDP Amendment would not cause a significant impact based on the City's performance criteria.

Intersection Impact Analysis

An intersection impact analysis was conducted using the City of Irvine performance criteria and City of Newport Beach performance criteria.

The results of the ICU analysis are summarized in Table 4.15-7 for City of Irvine intersections under the Long-Range Interim Year Approved conditions and Table 4.15-8 under the Buildout Approved conditions. As shown in the LOS summary, there are several intersections that exceed the LOS D threshold. However, the increment change between with project conditions and no project conditions does not exceed the 0.02 threshold. Also, the project does not cause any new deficiencies. Therefore, the proposed LRDP Amendment would not cause a significant impact based on the City's performance criteria.

For intersections located in Newport Beach, the resulting ICU and LOS are summarized in Table 4.15-9. As shown in the LOS summary, the increment of change between the with project conditions and no project conditions does not exceed the 0.010 threshold. Therefore, the proposed LRDP Amendment would not cause a significant impact based on the City's performance criteria.

Table 4.15-4

LRDP Amendment Trip Generation Summary

TAZ	Code and Description	Unit	Amount	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	ADT
UCI MCTM Trip Generation										
6 & 59/61	10. Undergraduate housing[2]	BED	3260	14	147	161	127	78	205	2771
6 & 62	11. Graduate housing[1,3]	BED	1453	11	116	127	100	61	161	2180
Total			4713	25	263	288	227	139	366	4951
UCI MCTM Trip Rates										
10. Undergraduate Housing		BED		0.004	0.045	0.049	0.039	0.024	0.063	0.850
11. Graduate Housing		BED		0.008	0.080	0.087	0.069	0.042	0.111	1.500
ITAM Trip Generation – Socioeconomic Based*										
567, 571 & 573	108. Dorm	BED	4713	42	392	434	246	115	361	3868

[1] Note that the actual amount considered by UCI staff is 1,556-beds, however 103 of those are covered under the current LRDP. The amount shown above is 1,556 beds minus 103 beds.
[2] Includes Campus Village and East Student Campus Apartments Phase V
[3] Includes Campus Village and Verano 1, 2, and 3 Redevelopment
* Socioeconomic-base trip generation is taken from the ITAM 15 model

Table 4.15-5

Arterial Roadway V/C Summary – Long Range Interim Year Approved

Link Location Number	Roadway	Segment	Lanes	Capacity	LRIY No Project (LRDP) ADT Volumes	LRIY No Project (LRDP) V/C Ratio	LRIY With Project (Housing Amendment) ADT Volumes	LRIY With Project (Housing Amendment) V/C Ratio
74	MacArthur Bl.	n/o Birch St.	8M	72000	25.6	.36	25.6	.36
111	Von Karman Av.	n/o Campus Dr.	4S	28000	23.3	.83	23.3	.83
112	Von Karman Av.	s/o Campus Dr.	4S	28000	17.8	.64	17.8	.64
150	Jamboree Rd.	b/w Dupont and Campus Dr.	6M	54000	53.4	.99	53.5	.99
151	Jamboree Rd.	b/w Campus Dr.and Birch St.	7M	63000	49.9	.79	50.1	.80
167	Carlson Av.	n/o Campus Dr.	4S	28000	8.3	.30	8.3	.30
182	Harvard Av.	s/o Coronado	4P	32000	27.9	.87	28.1	.88
184	Harvard Av.	n/o University Dr.	2C	13000	22.2	1.71	22.4	1.72
185	Harvard Av.	s/o University Dr.	6M	54000	21.2	.39	21.4	.40
186	University Dr.	n/o Campus Dr.	4P	32000	28.4	.89	28.6	.89
187	University Dr.	b/w Campus Dr.and Mesa Rd.	4P	32000	31.6	.99	31.8	.99
188	University Dr.	b/w Mesa Rd. and California Av.	4P	32000	31.6	.99	31.8	.99
189	University Dr.	b/w MacArthur Blvd. NB and California Av.	4P	32000	31	.97	31.2	.98
197	Bridge Rd.	n/o Campus Dr.	4S	28000	18.4	.66	18.3	.65
199	Berkeley Av.	n/o Campus Dr.	4P	32000	10.3	.32	10.3	.32
201	California Av.	n/o Campus Dr.	4P	32000	9.1	.28	9.4	.29
224	Culver Dr.	n/o Michelson Dr.	6M	54000	59.2	1.10	59.6	1.10
225	Culver Dr.	s/o Michelson Dr.	6M	54000	43.8	.81	44.2	.82
227	Culver Dr.	b/w University Dr. and Harvard Av.	6M	54000	52.3	.97	52.8	.98
228	Culver Dr.	s/o Harvard Av.	6M	54000	40	.74	40.5	.75
229	Culver Dr.	s/o Campus Dr.	4P	32000	26	.81	26.5	.83
232	Culver Dr.	s/o Anteater	4P	32000	31.7	.99	31.9	1.00
233	Bonita Cyn. Rd.	s/o Newport Coast Dr.	4P	32000	22.5	.70	22.5	.70
847	Michelson Dr.	e/o Carlson Av.	4P	32000	30.5	.95	30.5	.95
850	Michelson Dr.	w/o Culver Dr.	4P	32000	20.4	.64	20.4	.64
851	Michelson Dr.	e/o Culver Dr.	4P	32000	8.4	.26	8.4	.26
869	Campus Dr.	e/o MacArthur Bl.	4P	32000	17.1	.53	17.1	.53
871	Campus Dr.	e/o Von Karman Av.	4P	32000	14.5	.45	14.6	.46
872	Campus Dr.	w/o Jamboree Rd.	4P	32000	15.1	.47	15.2	.48
877	Campus Dr.	e/o Jamboree Rd.	4S	28000	22.5	.80	22.6	.81

879	Campus Dr.	b/w Carlson Av.and University Dr.	4S	28000	21.6	.77	21.8	.78
883	University Dr.	e/o Culver Dr.	4P	32000	40.8	1.28	40.9	1.28
888	Harvard Av.	e/o Bridge Rd.	4P	32000	13.5	.42	13.6	.43
890	Harvard Av.	b/w Berkeley Av.and California Av.	4P	32000	13.6	.43	13.5	.42
892	Harvard Av.	w/o Culver Dr.	4P	32000	15.3	.48	15.3	.48
893	Campus Dr.	b/w University Dr. and Bridge Rd.	4P	32000	24.8	.78	25.1	.78
894	Campus Dr.	e/o Bridge Rd.	4P	32000	24.6	.77	25	.78
896	Campus Dr.	e/o Berkeley Av.	4P	32000	20.6	.64	20.8	.65
898	Campus Dr.	b/w California and Culver	4P	32000	20.4	.64	20.5	.64
899	Campus Dr.	e/o Culver Dr.	4P	32000	18.4	.58	18.4	.58
906	Anteater Dr.-Shady Canyon Dr.	e/o Culver Dr.	2C	13000	7.9	.61	7.9	.61
1385	Harvard Av.	w/o Bridge Rd.	4P	32000	22	.69	22.2	.69
LRIYA – Long-Range Interim Year Approved; LRDP = Long Range Development Plan; ADT = average daily traffic; V/C = volume/capacity; M = major; S = secondary; P = primary; C = collector;								

Table 4.15-6

Arterial Roadway V/C Summary – Buildout Approved

Link Location Number	Roadway	Segment	Lanes	Capacity	Buildout No Project (LRDP) ADT Volumes	Buildout No Project (LRDP) V/C Ratio	Buildout With Project (HA) ADT Volumes	Buildout With Project (HA) V/C Ratio
74	MacArthur Bl.	n/o Birch St.	8M	72000	25.1	.35	25.1	.35
111	Von Karman Av.	n/o Campus Dr.	4S	28000	24.5	.88	24.5	.88
112	Von Karman Av.	s/o Campus Dr.	4S	28000	17.7	.63	17.7	.63
150	Jamboree Rd.	b/w Dupont and Campus Dr.	6M	54000	54.2	1.00	54.3	1.01
151	Jamboree Rd.	b/w Campus Dr.and Birch St.	7M	63000	51.9	.82	52.0	.83
167	Carlson Av.	n/o Campus Dr.	4S	28000	9.1	.33	9.1	.33
182	Harvard Av.	s/o Coronado	4P	32000	27.3	.85	27.4	.86
184	Harvard Av.	n/o University Dr.	2C	13000	21.7	1.67	21.8	1.68
185	Harvard Av.	s/o University Dr.	6M	54000	20.0	.37	20.1	.37
186	University Dr.	n/o Campus Dr.	6M	54000	33.7	.62	33.9	.63
187	University Dr.	b/w Campus Dr.and Mesa Rd.	6M	54000	37.8	.70	38.0	.70
188	University Dr.	b/w Mesa Rd. and California Av.	6M	54000	37.4	.69	37.6	.70
189	University Dr.	b/w MacArthur Blvd. NB and California Av.	6M	54000	35.7	.66	35.9	.66
197	Bridge Rd.	n/o Campus Dr.	4S	28000	17.0	.61	17.0	.61
199	Berkeley Av.	n/o Campus Dr.	4P	32000	10.1	.32	10.3	.32
201	California Av.	n/o Campus Dr.	4P	32000	9.4	.29	9.5	.30
224	Culver Dr.	n/o Michelson Dr.	6M	54000	58.8	1.09	59.2	1.10
225	Culver Dr.	s/o Michelson Dr.	6M	54000	43.3	.80	43.7	.81
227	Culver Dr.	b/w University Dr. and Harvard Av.	6M	54000	50.9	.94	51.4	.95
228	Culver Dr.	s/o Harvard Av.	6M	54000	37.2	.69	37.7	.70
229	Culver Dr.	s/o Campus Dr.	4P	32000	24.9	.78	25.3	.79
232	Culver Dr.	s/o Anteater	4P	32000	32.1	1.00	32.2	1.01
233	Bonita Cyn. Rd.	s/o Newport Coast Dr.	4P	32000	22.6	.71	22.6	.71
847	Michelson Dr.	e/o Carlson Av.	4P	32000	30.0	.94	30.0	.94
850	Michelson Dr.	w/o Culver Dr.	4P	32000	19.8	.62	19.8	.62
851	Michelson Dr.	e/o Culver Dr.	4P	32000	7.0	.22	7.0	.22
869	Campus Dr.	e/o MacArthur Bl.	4P	32000	17.5	.55	17.5	.55
871	Campus Dr.	e/o Von Karman Av.	4P	32000	15.9	.50	16.0	.50
872	Campus Dr.	w/o Jamboree Rd.	4P	32000	16.1	.50	16.1	.50
877	Campus Dr.	e/o Jamboree Rd.	4S	28000	26.5	.95	26.7	.95

879	Campus Dr.	b/w Carlson Av.and University Dr.	4S	28000	30.0	1.07	30.3	1.08
883	University Dr.	e/o Culver Dr.	4P	40000	44.1	1.10	44.2	1.11
888	Harvard Av.	e/o Bridge Rd.	4P	32000	14.6	.46	14.7	.46
890	Harvard Av.	b/w Berkeley Av.and California Av.	4P	32000	14.5	.45	14.6	.46
892	Harvard Av.	w/o Culver Dr.	4P	32000	16.5	.52	16.6	.52
893	Campus Dr.	b/w University Dr. and Bridge Rd.	4P	32000	32.8	1.03	33.2	1.04
894	Campus Dr.	e/o Bridge Rd.	4P	32000	31.2	.98	31.6	.99
896	Campus Dr.	e/o Berkeley Av.	4P	32000	23.4	.73	23.6	.74
898	Campus Dr.	b/w California and Culver	4P	32000	21.5	.67	21.6	.68
899	Campus Dr.	e/o Culver Dr.	4P	32000	17.6	.55	17.6	.55
906	Anteater Dr.-Shady Canyon Dr.	e/o Culver Dr.	2C	13000	7.9	.61	7.9	.61
1385	Harvard Av.	w/o Bridge Rd.	4P	32000	20.9	.65	21	.66

Table 4.15-7

ICU & LOS Summary – Long Range Interim Year Approved

Description	Long-Range Interim Year No Project				Long-Range Interim Year With Project				Difference		Significant Impact?	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM	AM	PM
84. MacArthur & Campus	0.76	C	1.02	F	0.77	C	1.01	F	0.01	-0.01	N	N
100. Von Karman & Main	0.77	C	0.86	D	0.77	C	0.86	D	0.00	0.00	N	N
105. Von Karman & Campus	0.76	C	0.89	D	0.76	C	0.89	D	0.00	0.00	N	N
143. Jamboree & I-405 NB Ramps	0.86	D	0.93	E	0.86	D	0.93	E	0.00	0.00	N	N
144. Jamboree & I-405 SB Ramps	1.13	F	1.04	F	1.13	F	1.04	F	0.00	0.00	N	N
145. Jamboree & Michelson	0.89	D	1.06	F	0.90	D	1.06	F	0.01	0.00	N	N
146. Jamboree & Dupont	0.64	B	0.78	C	0.65	B	0.77	C	0.01	-0.01	N	N
147. Jamboree & Campus	0.79	C	0.83	D	0.79	C	0.85	D	0.00	0.02	N	N
148. Jamboree & Birch	0.64	B	0.62	B	0.63	B	0.62	B	-0.01	0.00	N	N
149. Jamboree & Fairchild	0.61	B	0.77	C	0.61	B	0.76	C	0.00	-0.01	N	N
150. Jamboree & MacArthur	0.86	D	0.87	D	0.86	D	0.87	D	0.00	0.00	N	N
174. Carlson & Michelson	0.70	B	0.80	C	0.70	B	0.79	C	0.00	-0.01	N	N
175. Carlson Av & Campus	0.52	A	0.80	C	0.53	A	0.82	D	0.01	0.02	N	N
176. Fairchild & MacArthur	0.84	D	0.91	E	0.85	D	0.91	E	0.01	0.00	N	N
188. Harvard & Michelson	0.72	C	0.94	E	0.73	C	0.95	E	0.01	0.01	N	N
189. Harvard & University	0.75	C	0.80	C	0.75	C	0.81	D	0.00	0.01	N	N
190. University & Campus	0.76	C	0.88	D	0.77	C	0.87	D	0.01	-0.01	N	N
191. Mesa & University	0.61	B	0.65	B	0.61	B	0.65	B	0.00	0.00	N	N
192. California & University	0.95	E	0.85	D	0.96	E	0.85	D	0.01	0.00	N	N
193. MacArthur NB & University	0.59	A	0.69	B	0.59	A	0.71	C	0.00	0.02	N	N
194. MacArthur SB & University	0.64	B	0.54	A	0.64	B	0.55	A	0.00	0.01	N	N
202. Bridge & Harvard	0.66	B	0.63	B	0.66	B	0.65	B	0.00	0.02	N	N
203. Bridge & Campus	0.91	E	0.69	B	0.91	E	0.70	B	0.00	0.01	N	N
208. Bison & SR-73 NB Ramps	0.68	B	0.71	C	0.68	B	0.70	B	0.00	-0.01	N	N
209. Bison & SR-73 SB Ramps	0.48	A	0.39	A	0.49	A	0.40	A	0.01	0.01	N	N
210. Berkley & Harvard	0.47	A	0.57	A	0.47	A	0.58	A	0.00	0.01	N	N
211. Berkley & Campus	0.55	A	0.61	B	0.56	A	0.63	B	0.01	0.02	N	N
215. California & Harvard	0.44	A	0.50	A	0.45	A	0.52	A	0.01	0.02	N	N
216. California & Campus	0.46	A	0.61	B	0.48	A	0.64	B	0.02	0.03	N	N

232. Culver & I-405 NB Ramps	0.61	B	0.79	C	0.61	B	0.79	C	0.00	0.00	N	N
233. Culver & I-405 SB Ramps	0.74	C	0.74	C	0.73	C	0.75	C	0.01	0.01	N	N
234. Culver & Michelson	0.71	C	0.91	E	0.71	C	0.91	E	0.00	0.00	N	N
235. Culver & University	0.86	D	0.86	D	0.86	D	0.87	D	0.00	0.01	N	N
236. Culver & Harvard	0.76	C	0.73	C	0.75	C	0.74	C	0.01	0.01	N	N
237. Culver & Campus	0.62	B	0.59	A	0.64	B	0.59	A	0.02	0.00	N	N
238. Culver & Bonita	0.58	A	0.49	A	0.59	A	0.49	A	0.01	0.00	N	N
239. Bonita & Newport Coast	0.53	A	0.59	A	0.53	A	0.59	A	0.00	0.00	N	N
240. Bonita & SR-73 NB Ramps	0.57	A	0.61	B	0.56	A	0.61	B	0.01	0.00	N	N
241. Bonita & SR-73 SB Ramps	0.48	A	0.52	A	0.46	A	0.53	A	0.02	0.01	N	N
280. Newport Coast & SR-73 NB Ramps	0.58	A	0.52	A	0.57	A	0.52	A	0.01	0.00	N	N
Analysis uses the City of Irvine Criteria Shading denotes a location exceeding the City's performance threshold of LOS D. Source: ITAM15												

Table 4.15-8

ICU & LOS Summary – Buildout Approved

Description	Buildout No Project				Buildout With Project				Difference		Significant Impact?	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM	AM	PM
84. MacArthur & Campus .	0.76	C	1.03	F	0.78	C	1.03	F	0.02	0.00	N	N
100. Von Karman & Main	0.73	C	0.83	D	0.73	C	0.83	D	0.00	0.00	N	N
105. Von Karman & Campus	0.77	C	0.88	D	0.77	C	0.88	D	0.00	0.00	N	N
143. Jamboree & I-405 NB Ramps	0.81	D	0.94	E	0.82	D	0.94	E	0.01	0.00	N	N
144. Jamboree & I-405 SB Ramps	0.88	D	0.84	D	0.88	D	0.84	D	0.00	0.00	N	N
145. Jamboree & Michelson	0.91	E	1.03	F	0.92	E	1.03	F	0.01	0.00	N	N
146. Jamboree & Dupont	0.67	B	0.80	C	0.66	B	0.80	C	-0.01	0.00	N	N
147. Jamboree & Campus	0.84	D	0.82	D	0.85	D	0.82	D	0.01	0.00	N	N
148. Jamboree & Birch	0.68	B	0.59	A	0.67	B	0.59	A	-0.01	0.00	N	N
149. Jamboree & Fairchild	0.63	B	0.72	C	0.63	B	0.73	C	0.00	0.01	N	N
150. Jamboree & MacArthur	0.81	D	0.84	D	0.82	D	0.84	D	0.01	0.00	N	N
174. Carlson & Michelson	0.70	B	0.80	C	0.70	B	0.81	D	0.00	0.01	N	N
175. Carlson Av & Campus	0.71	C	0.81	D	0.71	C	0.81	D	0.00	0.00	N	N
176. Fairchild & MacArthur	0.80	C	0.87	D	0.80	C	0.88	D	0.00	0.01	N	N
188. Harvard & Michelson	0.85	D	0.81	D	0.84	D	0.80	C	-0.01	-0.01	N	N
189. Harvard & University	0.82	D	0.85	D	0.83	D	0.86	D	0.01	0.01	N	N
190. University & Campus	0.75	C	0.82	D	0.75	C	0.83	D	0.00	0.01	N	N
191. Mesa & University	0.49	A	0.59	A	0.49	A	0.59	A	0.00	0.00	N	N
192. California & University	0.98	E	0.80	C	0.98	E	0.81	D	0.00	0.01	N	N
193. MacArthur NB & University	0.72	C	0.80	C	0.72	C	0.80	C	0.00	0.00	N	N
194. MacArthur SB & University	0.69	B	0.63	B	0.69	B	0.63	B	0.00	0.00	N	N
202. Bridge & Harvard	0.59	A	0.52	A	0.59	A	0.51	A	0.00	-0.01	N	N
203. Bridge & Campus	1.03	F	0.85	D	1.03	F	0.86	D	0.00	0.01	N	N
208. Bison & SR-73 NB Ramps	0.68	B	0.77	C	0.70	B	0.77	C	0.02	0.00	N	N
209. Bison & SR-73 SB Ramps	0.45	A	0.38	A	0.45	A	0.39	A	0.00	0.01	N	N
210. Berkley & Harvard	0.43	A	0.55	A	0.44	A	0.55	A	0.01	0.00	N	N
211. Berkley & Campus	0.60	A	0.63	B	0.61	B	0.64	B	0.01	0.01	N	N
215. California & Harvard	0.40	A	0.52	A	0.43	A	0.52	A	0.03	0.00	N	N
216. California & Campus	0.62	B	0.80	C	0.64	B	0.83	D	0.02	0.03	N	N
232. Culver & I-405 NB Ramps	0.67	B	0.90	D	0.66	B	0.89	D	-0.01	-0.01	N	N

233. Culver & I-405 SB Ramps	0.70	B	0.71	C	0.70	B	0.71	C	0.00	0.00	N	N
234. Culver & Michelson	0.64	B	0.85	D	0.63	B	0.85	D	-0.01	0.00	N	N
235. Culver & University	0.85	D	0.84	D	0.85	D	0.85	D	0.00	0.01	N	N
236. Culver & Harvard	0.71	C	0.72	C	0.72	C	0.72	C	0.01	0.00	N	N
237. Culver & Campus	0.53	A	0.59	A	0.55	A	0.60	A	0.02	0.01	N	N
238. Culver & Bonita	0.58	A	0.54	A	0.60	A	0.54	A	0.02	0.00	N	N
239. Bonita & Newport Coast	0.56	A	0.59	A	0.56	A	0.58	A	0.00	-0.01	N	N
240. Bonita & SR-73 NB Ramps	0.59	A	0.59	A	0.58	A	0.57	A	-0.01	-0.02	N	N
241. Bonita & SR-73 SB Ramps	0.48	A	0.50	A	0.49	A	0.49	A	0.01	-0.01	N	N
280. Newport Coast & SR-73 NB Ramps	0.53	A	0.52	A	0.53	A	0.52	A	0.00	0.00	N	N
Analysis uses the City of Irvine Criteria Shading denotes a location exceeding the City's performance threshold of LOS D. Source: ITAM15												

Table 4.15-9

Intersection LOS Summary – General Plan Buildout

Description	General Plan Buildout No Project				Buildout With Project (Housing Amendment)				Difference		Significant Impact?	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM	AM	PM
9. MacArthur & Campus	0.810	D	1.241	F	0.812	D	1.241	F	0.002	0.000	N	N
11. Von Karman & Campus	0.731	C	0.973	E	0.734	C	0.976	E	0.003	0.003	N	N
13. Jamboree & Campus	0.930	E	1.180	F	0.938	E	1.182	F	0.008	0.002	N	N
46. Bison & SR-73 NB Ramps	0.517	A	0.609	B	0.517	A	0.609	B	0.000	0.000	N	N
47. Bison & SR-73 NB Ramps	0.422	A	0.322	A	0.422	A	0.331	A	0.000	0.009	N	N
53. Bonita Canyon & SR-73 NB Ramps	1.060	F	0.762	C	1.041	F	0.765	C	0.019	0.003	N	N
54. Bonita Canyon & SR-73 SB Ramps	0.461	A	0.660	B	0.442	A	0.675	B	0.019	0.015	N	N
62. Newport Coast & SR-73 NB Ramps	0.650	B	0.400	A	0.641	B	0.400	A	0.009	0.000	N	N

N = not a significant impact
Analysis uses the City of Newport Beach
Criteria Source: City of Newport Beach General Plan

b) Conflict with Congestion Management Program: Impact Adequately Addressed in LRDP EIR

Verano 8 Graduate Student Housing

The nearest elements of the Orange County Congestion Management Program (CMP) highways and arterials network are Jamboree Road and MacArthur Boulevard located approximately 0.5 miles from the Main Campus. CMP monitoring is conducted at the intersections of Jamboree Road/I-405 northbound and southbound ramps and at Jamboree Road/MacArthur Boulevard (LRDP EIR page 4.13-23). The CMP indicates that a significant impact may occur if a project generates more than 2,400 or more vehicle trips per day or contributes 1,600 or more vehicle trips per day into the CMP highway system. As discussed in 4.15(a) above, the project would generate approximately 1,854 ADT, which is below the CMP threshold. Therefore, it would not conflict with the CMP and no impact would occur. No mitigation is required.

LRDP Student Housing Amendment

As discussed in 4.15(a) above, full implementation of the LRDP Amendment would generate approximately 4,951 additional ADT. As discussed in Section 2.0, Project Description, future projects that implement the LRDP Amendment would be analyzed under CEQA at the project level, including project-specific traffic impact analyses. Additionally, with incorporation of LRDP EIR mitigation measures Tra-1A, Tra-1B, Tra-1C, Tra-1D, Tra-1F, and Tra-1I, which implements TDM measures, intersection traffic monitoring, and payment of fair share fees for roadway improvements, impacts due to traffic would be reduced to a less than significant level.

c) Air Traffic Patterns: No Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

The proposed project site is located approximately two miles southeast of JWA. The Initial Study prepared for the 2007 LRDP concluded that the campus is not situated under the preferred arrival or departure tracks associated with the airport and that future campus buildings would not penetrate the 100:1 Imaginary Surface for designated flight patterns (LRDP EIR page 25). Therefore, the proposed project would not affect air traffic patterns and no impact would occur. No mitigation is required.

d) Hazards Due to a Design Feature: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

All UCI project's transportation network would be designed in accordance with the same standards applied to other elements of the campus transportation network and would have no unique aspects not anticipated in the LRDP EIR. The 2007 LRDP EIR determined no impacts would occur from hazards due to design features or incompatible uses, which was addressed in the LRDP Initial Study (LRDP EIR, page 4.13-61). Therefore, impacts due to potential hazards of a design feature would be less than significant. No mitigation is required.

e) Inadequate Emergency Access: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

As discussed in Section 4.8, Hazards and Hazardous Materials, in the event of a road closure for the proposed Verano 8 project or future projects that implement the LRDP Amendment, prior to the start of construction, the contractor would comply with LRDP EIR mitigation measure Haz-6A to ensure sufficient notification to the UCI Fire Marshal to allow coordination of emergency services that may be affected (LRDP EIR, page 4.6-34). Furthermore, all projects during both construction and operation would comply with UCI's Emergency Response Plan that addresses roles and responsibilities, communications, training, and procedures in order to respond to emergency situations. Therefore, with implementation of LRDP EIR mitigation measure Haz-6A and compliance with the Emergency Response Plan, potential impacts to emergency response on or surrounding the campus would be reduced to a less than significant impact.

f) Public Transit, Bicycle, or Pedestrian Facilities: No Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

UCI administers an extensive program of Transportation Demand Management (TDM) measures that encourage commuters to use alternate modes of transportation, including walking, bicycling, carpooling, vanpooling, and riding the UCI shuttle, other local shuttle systems, train, or bus. With these measures, UCI has been successful in achieving an average vehicle ridership higher than the AQMD regional goal (LRDP EIR, page 4.13-58). As such, the proposed Verano 8 project and future projects that implement the LRDP Amendment would not hinder implementation of TDM measures on the campus. Therefore, the proposed Verano 8 project and implementation of the LRDP Amendment would not conflict with alternative transportation plans, policies and programs and no impact would occur. No mitigation is required.

Mitigation Measures

LRDP EIR Haz-6A: Prior to initiating on-site construction for future projects that implement the 2007 LRDP and would involve a lane or roadway closure, the construction contractor and/or UCI Design and Construction Services shall notify the UCI Fire Marshal. If determined necessary by the UCI Fire Marshal, local emergency services shall be notified of the lane or roadway closure by the Fire Marshal.

LRDP EIR Tra-1A: To reduce on- and off-campus vehicle trips and resulting impacts, UCI will continue to implement a range of Transportation Demand Management (TDM) strategies. Program elements will include measures to increase transit and shuttle use, encourage alternative transportation modes including bicycle transportation, implement parking polices that reduce demand, and implement other administrative mechanisms that reduce vehicle trips to and from the campus. UCI shall monitor the performance of TDM programs through annual surveys.

LRDP EIR Tra-1B: UCI will continue to pursue the implementation of affordable on-campus housing to reduce peak-hour commuter trips to the campus.

LRDP EIR Tra-1C: To enhance transit systems serving the campus and local community, UCI will work cooperatively with the City of Irvine, City of Newport Beach, OCTA and other local agencies to coordinate service and routes of the UCI Shuttle with existing and proposed shuttle and transit programs including the proposed Jamboree/IBC Shuttle, proposed Orange County Great Park Shuttle, Irvine Spectrum Shuttle, and other community transit programs.

LRDP EIR Tra-1D: UCI will monitor campus trip generation and distribution and the performance of UCITP intersections in relationship to enrollment growth. Monitoring will be conducted in consultation with the City of Irvine and the City of Newport Beach, and will occur at each 3,000-student increase in enrollment (measured as General Campus three-term average headcount), above the 2007-08 General Campus enrollment level. If UCI monitoring determines that LRDP traffic results in significant traffic impacts at UCITP intersections, UCI will implement measures to reduce vehicle trips contributing to the impact or provide "fair share" funding for improvements at the impacted intersections as described in Mitigation Measures Tra-1E and Tra-1F. UCI's share of funding will be determined by the percentage of UCI traffic volumes compared to the total traffic volumes at the impacted intersections.

LRDP EIR Tra-1F: If the City of Irvine or City of Newport Beach implements UCITP improvements following UCI determination that LRDP traffic is causing a significant impact, and UCITP fees collected to date are insufficient to fund UCI's fair share, UCI shall identify and obtain funding for the fair share of identified improvements from an alternative source.

LRDP EIR Tra-1I: UCI shall review individual projects proposed under the 2007 LRDP for consistency with UC Sustainable Transportation Policy and UCI Transportation Demand Management goals to ensure that bicycle and pedestrian improvements, transit stops, and other project features that promote alternative transportation are incorporated to the extent feasible.

4.16 Tribal Cultural Resources

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape, that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				X	
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.				X	

Discussion

Tribal cultural resources thresholds were added in the 2018 CEQA Guidelines Update, which came into effect on December 28, 2018. As such, a Tribal Cultural Resources section was not specifically included in the 2007 LRDP EIR. However, many tribal cultural resources-related issues are discussed in Section 4.4 of the LRDP EIR, which addresses historical, archeological, paleontological, and tribal resources.

a) Eligible for Listing in Local or California Register of Historical Resources: Less than Significant Impact

b) Resources Significance to a California Native American Tribe: Less than Significant Impact

Verano 8 Graduate Student Housing

Recorded archaeological resources located within the UCI campus are summarized in Table 4.4-1 of the 2007 LRDP EIR. To date, no archaeological sites have been discovered and recorded on or adjacent to the project site. There is some possibility, however, that unknown archaeological remains could occur beneath the ground surface (LRDP EIR, page 4.4-4). Earth moving activities could possibly uncover previously undetected archaeological remains associated with prehistoric cultures, and a loss of a significant archaeological resource could result if such materials are not properly identified. With implementation of mitigation measures, Cul-1C, as described in Section 4.4, Cultural Resources, and Cul-4A, as described in Section 4.6, Geology and Soils, which would require retention of an archaeological/paleontological monitor and consultation with a culturally-affiliated Native American, impacts would be less than significant.

In accordance with AB 52, notification letters were mailed to the Gabrieleño Band of Mission Indians – Kizh Nation and Juaneño Band of Mission Indians – Acjachemen Nation on February 2, 2019. UCI received notification from the Gabrieleño Band of Mission Indians requesting that an affiliated Native American monitor be on-site during ground disturbance activities. UCI has agreed with the Gabrieleño Band of Mission Indians' request and would have a Native American monitor on-site alongside the archeological/paleontological monitor during earthmoving activities for the project.

With the implementation of LRDP EIR mitigation measure Cul-1C and Cul-4A (hiring a qualified archaeological/paleontological monitor for ground-disturbing activities and to ensure the protection of any resources that may be discovered) as discussed in Sections 4.4, Cultural Resources, and 4.6, Geology and Soils and agreements in place with the Gabrieleño to monitor on-site earthwork during construction, impacts to tribal cultural resources would be reduced to a less than significant level. No additional mitigation beyond Cul-1C and Cul-4A, as described within Sections 4.4 and 4.6 of this IS/MND, is required.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core and a 12-acre parcel within the West Campus. Since its founding, the UCI campus has undergone extensive development to accommodate campus programmatic growth and as a result a majority of the campus has been previously developed. However, the southern area of the East Campus and the 12-acre parcel in the West Campus are currently undeveloped. However, in accordance with the 1988 Cultural Resources Survey prepared for the campus and as discussed in Table 4.4-1 of the LRDP EIR, no known archaeological resources exist within proposed areas of development of the LRDP Amendment. However, as discussed above, it is common practice for campus projects to include archaeological, paleontological, and tribal cultural monitoring for projects during earth movement activities. In addition, as discussed in Section 2.0, Project Description, potential future projects associated with the 2007 LRDP and the LRDP Amendment would be further analyzed under CEQA at the project-level.

With the implementation of LRDP EIR mitigation measure Cul-1C and Cul-4A (hiring a qualified archaeological/paleontological monitor for ground-disturbing activities and to ensure the protection of any resources that may be discovered) as discussed in Sections 4.4, Cultural Resources, and 4.6, Geology and Soils, and compliance with AB 52, impacts to tribal cultural resources would be reduced to a less than significant level. No additional mitigation beyond Cul-1C and Cul-4A, as described within Sections 4.4 and 4.6 of this IS/MND, is required.

Mitigation Measures

LRDP EIR Cul-1C: Prior to land clearing, grading, or similar land development activities for future projects that implement the 2007 LRDP in areas of identified archaeological sensitivity, UCI shall retain a qualified archaeologist (and, if necessary, a culturally affiliated Native American) to monitor these activities. In the event of an unexpected archaeological discovery during grading, the on-site construction supervisor shall redirect work away from the location of the archaeological find. A qualified archaeologist shall oversee the evaluation and recovery of archaeological resources, in accordance with the procedures listed below, after which the on-site construction supervisor shall be notified and shall direct work to continue in the location of the archaeological find. A record of monitoring activity shall be submitted to UCI each month and at the end of monitoring. If an archaeological discovery is determined to be significant, the archaeologist shall prepare and implement a data recovery plan. The plan shall include, but not be limited to, the following measures:

a. Perform appropriate technical analyses;

b. File an resulting reports with South Coast Information Center; and

c. Provide the recovered materials to an appropriate repository for curation, in consultation with a culturally-affiliated Native American.

LRDP EIR Cul-4A: Prior to grading or excavation for future projects that implement the 2007 LRDP and would excavate sedimentary rock material other than topsoil, UCI shall retain a qualified paleontologist to monitor these activities. In the event fossils are discovered during grading, the on-site construction supervisor shall be notified and shall redirect work away from the location of the discovery. The recommendations of the paleontologist shall be implemented with respect to the evaluation and recovery of fossils, in accordance with mitigation measures Cul-4B and Cul-4C, after which the on-site construction supervisor shall be notified and shall direct work to continue in the location of the fossil discovery. A record of monitoring activity shall be submitted to UCI each month and at the end of monitoring.

4.17 Utilities and Service Systems

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?				**X**	
b) Have sufficient water supplies available to serve the project and reasonably forseeable future development during normal, dry, and multiple dry years?				**X**	
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				**X**	

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?				X	
e) Comply with applicable federal, state, and local management and reduction statutes and regulations related to solid waste?					X

Discussion

Utilities and service systems issues are discussed in Section 4.14 of the 2007 LRDP EIR.

a) Construction of New or Expansion of Existing Water, Wastewater, Electrical, Natural Gas, or Telecommunications Facilities: Less than Significant Impact

Verano 8 Graduate Student Housing

As discussed in Section 2.0, Project Description, initial analyses indicate that existing utility systems have adequate capacity to serve the project and are available in the vicinity of the site. The proposed project would receive water services from the Irvine Ranch Water District (IRWD). Potable water would be connected through an existing eight-inch line and sanitary sewer water through an existing eight-inch line both located on the project site. Recycled water for dual-flush plumbing and landscaping would require installation of a four-to-six-inch line that would connect to an existing line located in either California Avenue or East Peltason Drive. To provide on-site electricity, the structures would connect to an existing 12-kilovolt (kV) transformer located to the east of the project site. Telecommunications would connect to the campus' service through the installation of a new vault/pull box and four-inch conduits located to the east of the project site.

Construction impacts would occur as part of the general site development phase while utility improvements are installed; however, no alterations to existing main line facilities would be required to provide adequate service to the project site that would require the construction of new off-site utility facilities. Therefore, construction of these components would not result in the construction of new or expansion of utility facilities and impacts would be less than significant. No mitigation is required.

LRDP Student Housing Amendment

Implementation of the LRDP Amendment would result in an increase in the amount of student beds located on the campus, but no changes to campus populations or other building capacity envelopes would occur. Student enrollment levels would not increase beyond what was analyzed in the 2007 LRDP and its associated EIR. These students would already be on campus for classes, but would increase the number of those students living on the campus, which could result in additional demand for utilities. These students, however, would be living in nearby housing communities within the City of Irvine. With the construction of future student housing projects that implement the LRDP Amendment, it would transfer the students living in adjacent off-campus communities to the campus itself. Therefore, additional demand for utilities beyond what was already anticipated within the area surrounding the campus would be minimal.

UCI, however, is currently coordinating with IRWD regarding future development on the campus. In the event that additional water facilities would need to be constructed due to future projects that implement the proposed LRDP Amendment, each would be analyzed within a project-level CEQA document as discussed in Section 2.0, Project Description.

UCI relies on a central energy plant and distribution system to meet the primary energy needs of the Academic Core. Outer campus development, including student housing areas, are generally served by UCI's central electric distribution system, but rely on distributed systems for thermal energy, such as heating, cooling, and hot water. The UCI Central Plant utilizes a combined heat and power (CHP) system with a natural gas-driven turbine to provide the majority of electrical power and thermal energy to the campus. Grid-purchased electricity and on-site photovoltaic systems supplement CHP-produced energy to serve the campus' remaining electrical energy needs. As discussed in Section 2.0, Project Description, future projects that implement the LRDP Amendment would be analyzed at the project-level under CEQA, including confirmation of sufficient capacity of existing electric and natural gas infrastructure. As a project is designed, LRDP and/or project-specific mitigation measures, if needed, would be applied to address any potential project-specific impacts that could result due to the construction of utility infrastructure, including aesthetics, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, transportation, tribal cultural resources, utilities and service systems, and wildfire.

b) Water Supplies: Less than Significant Impact

Verano 8 Graduate Student Housing

The 2015 IRWD Urban Water Management Plan (UWMP, 2015) projects district-wide water supply availability and demand through 2035, including the 2007 LRDP buildout. IRWD staff in consultation with UCI reviewed projected water service demand related to implementation of the

2007 LRDP for consistency with the 2005 UWMP and concluded that water supply reliability would not be compromised (LRDP EIR, page 4.14-17). Because the proposed project does not increase campus population or estimated water demand beyond what was analyzed in the 2007 LRDP EIR, the irrigation needs throughout the campus would continue to be fully met through reclaimed water supplies.

Although implementation of the 2007 LRDP would result in less than significant impacts to water supply, UCI continues to cooperatively and continually work with IRWD to reduce domestic water demand on campus consistent with UCI sustainability goals, as follows:

- Continue to use reclaimed water for all landscape irrigation uses where feasible and permissible by law.
- Work with IRWD to identify opportunities for additional uses of reclaimed water on-campus to reduce domestic water demand including central utility plant applications, dual plumbing systems in buildings, and other applications to reduce demand for domestic water.
- Work collaboratively with IRWD to identify feasible programs, projects, and measures to reduce domestic water demand.

Therefore, because the proposed project's domestic and reclaimed water demand is consistent with the projections developed for the 2007 LRDP EIR and anticipated in the UWMP forecasts, impacts to water supplies would be less than significant. No mitigation is required.

LRDP Student Housing Amendment

Implementation of the LRDP Amendment, which would result in an additional 4,363 beds, is not currently accommodated in the IRWD UWMP. However, the University regularly consults with IRWD regarding ongoing development throughout the campus and would continue to consult and jointly implement projects to increase water capacity to the campus, as needed. These projects would be analyzed at the project-level under CEQA. As a project is designed, LRDP and/or project-specific mitigation measures, if needed, would be applied to address any potential project-specific impacts that could result due to the construction of water infrastructure, including aesthetics, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, transportation, tribal cultural resources, utilities and service systems, and wildfire. Therefore, in consultation with IRWD and additional project-level CEQA analysis, implementation of the LRDP Amendment would not adversely affect water supply. No mitigation is required.

c) Wastewater Capacity: Less than Significant Impact

Verano 8 Graduate Student Housing

The Michaelson Water Recycling Plant (MWRP) currently treats up to 28 million gallons per day (mgd) of wastewater, and an additional upgrade to 33 mgd is scheduled to be completed in 2025. IRWD forecasts a total service area demand for wastewater treatment of 26.11 mgd by 2025, including the projected increase associated with full implementation of the 2007 LRDP. Because the proposed Verano 8 project is consistent with the LRDP EIR as discussed in Section 2.0, Project Description, the MWRP would have sufficient capacity to accommodate the anticipated wastewater generation throughout the IRWD service area, including the proposed project. Therefore, the impact to wastewater treatment capacity would be less than significant (LRDP EIR, pages 4.14-12 through 13). No mitigation is required.

LRDP Student Housing Amendment

See 4.17(b), LRDP Student Housing Amendment, above. The University is currently in consultation with the wastewater provider, IRWD, regarding capacity for future development projects on campus. No mitigation is required.

d) Solid Waste: Less than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

The Frank R. Bowerman Landfill is permitted to receive a daily maximum of 11,500 tons per day and is expected to close in the year 2053. The Olinda Landfill and Prima Deshecha Landfill also serve the County of Orange, which are utilized if the Frank R. Bowerman Landfill reaches its daily capacity. Olinda Landfill permits 8,000 tons daily with an expected closure in 2030; Prima Deshecha Landfill is scheduled to close in 2067 and permits 4,000 tons daily.

Orange County Waste & Recycling and the three landfills are in compliance with the California Integrated Waste Management Act of 1989 (AB 939), which requires each jurisdiction to maintain 15 years of solid waste disposal capacity. Therefore, based on available landfill capacity, impacts would be less than significant. No mitigation is required.

e) Solid Waste Regulations: No Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

The University of California is not subject to Assembly Bill 939 or other local agency regulations pertaining to solid waste management. Nonetheless, the University of California has adopted the Sustainable Practices Policy that requires campuses to undertake aggressive programs to reduce solid waste generation and disposal (LRDP EIR, 4.14-20). This includes voluntary compliance with the State Agency Integrated Waste Management Plan and prioritization of waste and recycling for LEED credits, including a life cycle assessment for reuse of building materials. Furthermore, Section F of the UC Sustainable Practices Policy, Recycling and Waste Management, requires the ultimate goal of zero waste by 2020. The campus currently has an 83 percent diversion rate from local landfills that has been achieved through recycling, composting, and reusing. Continued outreach programs, increased sustainable purchasing options, and proper hazardous waste disposal have the campus on track to reach 95 percent, or “zero waste”. The proposed Verano 8 project and future projects that implement the LRDP Amendment, specifically additional student housing projects and its support uses, would not require any unique waste collection or disposal methods or facilities and would not conflict with or obstruct any Federal, State, or local programs to reduce solid waste generation. Therefore, the proposed project and LRDP Amendment would not violate solid waste regulations and no impact would occur. No mitigation is required.

Mitigation Measures

No mitigation measures required.

4.18 Wildfire

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				X	
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				X	
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				X	

Discussion

Wildfire thresholds were added in the 2018 CEQA Guidelines Update, which became effective on December 28, 2018. As such, a Wildfire section was not specifically included in the 2007 LRDP EIR. However, many wildfire-related issues are discussed in Section 4.6 of the LRDP EIR, which addresses hazards and hazardous materials.

a) Impair Adopted Emergency Response Plan: Less than Significant Impact

Verano 8 Graduate Student Housing

UCI maintains a campus-wide Emergency Operations Plan (EOP)[1] that establishes policies, procedures, and organizational infrastructure for the campus to address potential emergency scenarios, such as earthquake, active shooter, laboratory fire, cyber threat, public health emergency, hazardous waste spill or release, terrorism, civil disturbance, and wildland fire. The proposed project would be consistent with surrounding uses, which predominantly consists of student housing and support uses such as parking and childcare facilities, and would not result in additional hazards not previously addressed within the EOP.

In the event that either California Avenue, Adobe Circle South, or Verano Road South would need to be closed during project construction, access by fire protection, ambulances, police, or other emergency vehicles would be maintained for the active construction zones and surrounding land uses. All closures during construction would be reviewed by the UCI Fire Marshal, as discussed in Section 4.8, Hazards and Hazardous Materials, to ensure adequate emergency access at all times. Therefore, the proposed Verano 8 project would not substantially impair an adopted emergency response plan and impacts would be less than significant. No additional mitigation is required.

LRDP Student Housing Amendment

As described above, UCI maintains a campus-wide EOP that establishes procedures for a number of emergency scenarios that could occur on the campus. Future projects that implement the LRDP Amendment would result in increased student housing density in areas of the campus already previously designated and predominantly built-out with student housing and compatible uses in the East Campus and Academic Core. In addition, the change in land use designation of the West Campus 12-acre parcel from Student Housing to Academic and Support is consistent and compatible with the existing surrounding uses, which include campus support facilities, such as Environmental Health and Safety, Electrical Substation, Grounds Maintenance Facility, and Building Services. The LRDP Amendment would also change the land use designation of a six-acre parcel located in the Academic Core. However, Campus Village student housing is currently located on the parcel, and therefore, changing the land use to Student Housing would be consistent with the existing use.

Therefore, future projects that implement the LRDP Amendment would be consistent with surrounding uses and would not result in additional hazards not previously addressed in the EOP. Additionally, as is the practice on the UCI campus, future projects that implement the LRDP Amendment would have the UCI Fire Marshal review any proposed road closures and emergency access would be maintained for both the active construction site and all surrounding uses. Therefore, the LRDP Amendment would not substantially impair an adopted emergency response

[1] https://police.uci.edu/em/EmergencyManagementPlan.pdf. Accessed March 15, 2019.

plan and impacts would be less than significant. No mitigation is required.

b) Expose Occupants to Wildfire: Less than Significant Impact

Verano 8 Graduate Student Housing

Areas designated as having a high wildfire risk generally have characteristics such as steep slopes, dense native vegetation, and limited vehicle access and water supplies. The proposed project site is characterized as a relatively flat surface and is surrounded on all sides with urban development, including vehicle access via California Avenue, Adobe Circle South, and Verano Road South. No significant amount of flashy fuels, such as native vegetation, occurs within or adjacent to the project site. Therefore, the proposed project would not expose occupants to wildfire and impacts would be less than significant. No mitigation is required.

LRDP Student Housing Amendment

The California State Board of Forestry and Fire Prevention has identified areas where the State has primary financial responsibility for preventing and suppressing fires, and are referred to as State Responsibility Areas (SRAs).[2] Lands where neither the State nor federal government has any legal responsibility for providing fire protection are referred to as Local Responsibility Areas (LRAs). UCI, including the proposed project site, is located in a LRA and the Orange County Fire Authority (OCFA) is responsible for fire prevention and suppression services. As shown in mapping by CalFire, the campus is not located in a LRA Very High Fire Hazard Severity Zone (VHFHSZ).[3] Additionally, as required by OCFA, areas adjacent to open vegetation would require the installation of a fuel modification zone, which includes vegetation trimming, to reduce potential exposure to wildfire. Future projects that implement that LRDP Amendment would not construct additional development in a high fire hazard area and would not hinder regional wildfire suppression efforts. Therefore, exposing occupants to wildfire would be less than significant. No mitigation is required.

c) Infrastructure that May Exacerbate Fire Risk: Less than Significant Impact

Verano 8 Graduate Student Housing

As discussed in 4.18(b), the project site is not located in a high wildfire risk area. Additionally, the site is adequately served by existing access roads and utilities that would be connected within or adjacent to the project site, which has been previously built-out. Therefore, the proposed project would not require the installation or maintenance of infrastructure that would exacerbate fire risk and impacts would be less than significant. No mitigation is required.

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[2] http://www.fire.ca.gov/firepreventionfee/sraviewer_launch. Accessed June 15, 2019.

[3] http://egis.fire.ca.gov/FHSZ/. Accessed June 15, 2019.

LRDP Student Housing Amendment

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core and a 12-acre parcel within the West Campus. As discussed above in 4.19(b), the campus is not located in a high wildfire risk area. Additionally, the majority of the proposed changes in the LRDP Amendment are predominantly located within developed areas of the Academic Core and East Campus.

The southern area of the East Campus and the 12-acre parcel within the West Campus have adjacent areas designated as Open Space in the LRDP that consist of native vegetation. However, for future projects that implement the LRDP Amendment, fuel modification zones would be installed, as required by OCFA, which would reduce the potential for wildfire impacts. Additionally, areas designated as Open Space within the LRDP do not allow the construction of infrastructure; therefore, the LRDP Amendment would not require the installation or maintenance of infrastructure that would exacerbate fire risk and impacts would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation required.

4.19 Mandatory Findings of Significance

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				X	
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of past, present, and probably future projects?)				X	

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	X

a) *Degrade the Environment, Reduce Habitat or Wildlife Populations, Eliminate Examples of California History: Less than Significant Impact*

Verano 8 Graduate Student Housing

As discussed under Sections 4.1 through 4.18, no significant environmental impacts that are not mitigatable were identified in the responses to questions regarding project effects. The project site does not contain, support, or connect to any sensitive biological resources nor does it adversely affect any such resources. Ornamental landscaping and disturbed vegetation may result in impacts to bird species during the nesting season. However, with implementation of project-specific mitigation measure BR-1, which would require nesting bird surveying prior to construction, impacts would be reduced to a less than significant level.

There are no known historic resources on site, but in the event that a prehistoric, archaeological, or tribal cultural resource is discovered during grading, compliance with LRDP EIR mitigation measures Cul-1C, Cul-4A, Cul-4B, and Cul-4C and having an on-site tribal cultural resources monitor during earthmoving activities, would reduce impacts to a less than significant level.

LRDP Student Housing Amendment

As discussed under Sections 4.1 through 4.18, no significant environmental impacts that are not mitigatable were identified in the responses to questions regarding project effects. Future projects that implement the LRDP Amendment may impact sensitive biological resources and wildlife, specifically in areas of the LRDP Amendment that are currently undeveloped in the East Campus and West Campus. However, implementation of project-specific mitigation measure BR-1 and LRDP EIR mitigation measures Bio-2B, Bio-3A, Bio-3B, and Bio-3C would reduce impacts to a less than significant level by requiring nesting bird, wildlife, and riparian wetland habitat surveying and mitigation.

Future projects that implement the LRDP Amendment may impact historic, paleontological, archaeological, or tribal cultural resources, especially as campus buildings age and if projects are sited in areas of higher likelihood to contain cultural resources. However, implementation of LRDP EIR mitigation measures Cul-1C, Cul-2A, Cul-2B, Cul-2C, Cul-2D, Cul-4A, Cul-4B, and Cul-4C would reduce impacts to cultural and historical resources to a less than significant level.

b) *Cumulatively Considerable Impacts: Less Than Significant Impact*

Verano 8 Graduate Student Housing

Long-term environmental consequences resulting from the cumulative effect of completing development through implementation of the 2007 LRDP were thoroughly evaluated in the 2007 LRDP EIR. As discussed in Section 2.0, Project Description, the project is consistent with the LRDP and is within the student housing capacity and enrollment envelopes analyzed within the 2007 LRDP EIR. No new or increased severity of impacts beyond what was anticipated in the 2007 LRDP EIR have been identified as a result of the analysis completed for the proposed Verano 8 project. As discussed in Sections 4.1 through 4.18, project-level impacts have been determined to be less than significant, no impact, or mitigated to a less than significant level. Therefore, the proposed project would not result in cumulatively considerable impacts.

LRDP Student Housing Amendment

As discussed above, the long-term environmental consequences resulting from the cumulative effect of completing development through implementation of the 2007 LRDP were thoroughly evaluated in the 2007 LRDP EIR. Although the LRDP Amendment would result in an increase of 4,363 additional student beds above what was previously analyzed in the 2007 LRDP EIR and would contribute to incremental impacts on the environment, no new or increased severity of impacts beyond what was anticipated in the 2007 LRDP EIR have been identified as a result of the analysis completed for the LRDP Amendment in this IS/MND.

As discussed in Section 2.0, Project Description, the LRDP Amendment would increase student housing density within the Academic Core and East Campus and change the land use designations of two sites, a six-acre parcel within the Academic Core and a 12-acre parcel within the West Campus. Although the LRDP Amendment would increase student housing capacity on the campus, overall student enrollment and faculty and staff populations would remain unchanged. When viewed in conjunction with other closely related past, present, or reasonably foreseeable future projects, such as the proposed Verano 8 project also analyzed within this IS/MND, implementation of the LRDP Amendment, which would build phased student housing over the course of an undetermined number of years, would not cumulatively contribute to impacts as impacts would likely be reduced to a less than significant level with the inclusion of mitigation. In addition, project-level CEQA analysis would be completed for all future projects that implement the LRDP Amendment. Therefore, the implementation of the LRDP Amendment would not result in cumulatively considerable impacts.

c) Direct or Indirect Effects on Humans: Less Than Significant Impact

Verano 8 Graduate Student Housing and LRDP Student Housing Amendment

No significant impacts on human beings have been identified in this IS/MND. Short-term adverse impacts involving construction phase dust, exhaust emissions, and noise would be less than significant with the incorporation and implementation of the identified routine control measures set forth in the 2007 LRDP EIR and project-specific mitigation. There is no evidence of site contamination with hazardous wastes or substances within the Verano 8 project site or areas within the LRDP Amendment, and the student housing projects themselves would not emit hazardous air emissions or involve consumption, generation, transport or disposal of dangerous quantities of hazardous materials or wastes. As required by the UC Fire Marshal and LRDP EIR mitigation measure Haz-6A, access to construction sites and adjacent uses by emergency vehicles would be maintained throughout construction and would not constrain emergency access to any portion of the campus during the operation of the proposed Verano 8 project and future projects that implement the LRDP Amendment. Therefore, impacts due to direct or indirect effects on humans would be less than significant.

5.0 PREPARERS

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APPENDIX A

Air Quality Assessment

Air Quality Assessment
for the proposed
Verano 8 & LRDP Student Housing Amendment
at the University of California, Irvine

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June 2019

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LIST OF ABBREVIATED TERMS

AQMP	air quality management plan
ADT	average daily traffic
CARB	California Air Resources Board
CAAQS	California Ambient Air Quality Standards
CCAA	California Clean Air Act
CalEEMod	California Emissions Estimator Model
CEQA	California Environmental Quality Act
CO	carbon monoxide
COHS	College of Health Sciences
cfs/sf	cubic feet per second per square foot
cy	cubic yards
DPM	diesel particulate matter
EHS	Environmental Health and Safety
EPA	Environmental Protection Agency
FCAA	Federal Clean Air Act
gsf	gross square foot
H_2S	hydrogen sulfide
Pb	lead
LST	local significance threshold
LRDP	Long Range Development Plan
$\mu g/m^3$	micrograms per cubic meter
mg/m^3	milligrams per cubic meter
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
O_3	ozone
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppm	parts per million
ROG	reactive organic gases
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SRA	source receptor area
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Governments
SIP	State Implementation Plan
SO_{4-2}	sulfates
SO_2	sulfur dioxide
TAC	toxic air contaminant
C_2H_3Cl	vinyl chloride
UC	University of California
UCI	University of California, Irvine

1 INTRODUCTION

This report documents the results of an Air Quality Assessment completed for the University of California Irvine (UCI) Verano 8 Graduate Student Housing Project. The purpose of this Air Quality Assessment is to evaluate the potential construction and operational emissions associated with the proposed Project and determine the Project's level of impact on the environment.

1.1 PROJECT LOCATION

The Project is in Orange County (County), in the City of Irvine (City) within the UCI campus; see Exhibit 1: Regional Vicinity. The 7.8-acre Project site is located on the UCI East Campus adjacent to the southeast corner of the Adobe Circle South and Verano Road South intersection; see Exhibit 2: Site Vicinity. The site is surrounded by existing campus development with Puerta del Sol student housing to the north, Verano Place student housing to the west and south, and the Early Childhood Education Center and Infant/Toddler Centers I and II to the east. Regional access to the Project site is provided via Interstate 405 and State Route 73 located to the north and west, respectively. Local access to the Project site is provided via Culver Drive and Campus Drive.

1.2 PROJECT DESCRIPTION

The Project proposes to construct up to 1,200 new graduate student beds on an approximately 7.8-acre site in the UCI East Campus; see Exhibit 3: Site Plan. The existing site is predominantly vacant and was previously graded and developed as a prior phase of the Verano Place Graduate Apartments complex, which has since been demolished. The Project would demolish the existing 6,000 gross square foot (gsf) maintenance and operations facility and construct an approximately 500,000 gsf graduate student housing facility, approximately 28,000 gsf community center, approximately 1,000-space parking structure, and an approximately 10,500 gsf replacement maintenance and operations facility. The overall student population would not directly increase. The Project site is inside the UCI campus and is zoned for student housing.

In addition to the proposed Verano 8 Project, UCI is proposing to amend its existing 2007 Long Range Development Plan (LRDP) to increase on-campus student housing capacity from 50 percent to 60 percent of student enrollment. Changes in land use designations are proposed at a six-acre parcel (TAZ 6) in the Academic Core (change from Academic and Support to Student Housing; refer to Exhibit 4: LRDP Student Housing) where the existing Campus Village housing is located. Ultimately, the Campus Village would be redeveloped at a higher density on the newly designated Student Housing portion of the site. An undeveloped 12-acre parcel (TAZ 50) in the West Campus would be redesignated from Student Housing to Academic Support to accommodate the LRDP program changes. Higher building densities across the campus would accommodate the LRDP Amendment's increased bed capacity and the 12-acre parcel in the West Campus is no longer needed for student housing.

Project Construction and Phasing

Project construction is anticipated to occur beginning in April 2020 and last approximately 26 months, ending in July 2022. Grading for the proposed improvements would require cut and fill to create building pads. The Project is anticipated to require a net cut of approximately 14,000 cubic yards (cy) of soil. Final grading plans would be approved by the UCI Building Official before Grading Permit issuance. All infrastructure (i.e. storm drain, water, wastewater, dry utilities, and street improvements) would be installed during grading. Construction for the Project would occur in one phase. For purposes of this environmental analysis, opening year is conservatively assumed to be 2022.

Exhibit 1: Regional Vicinity

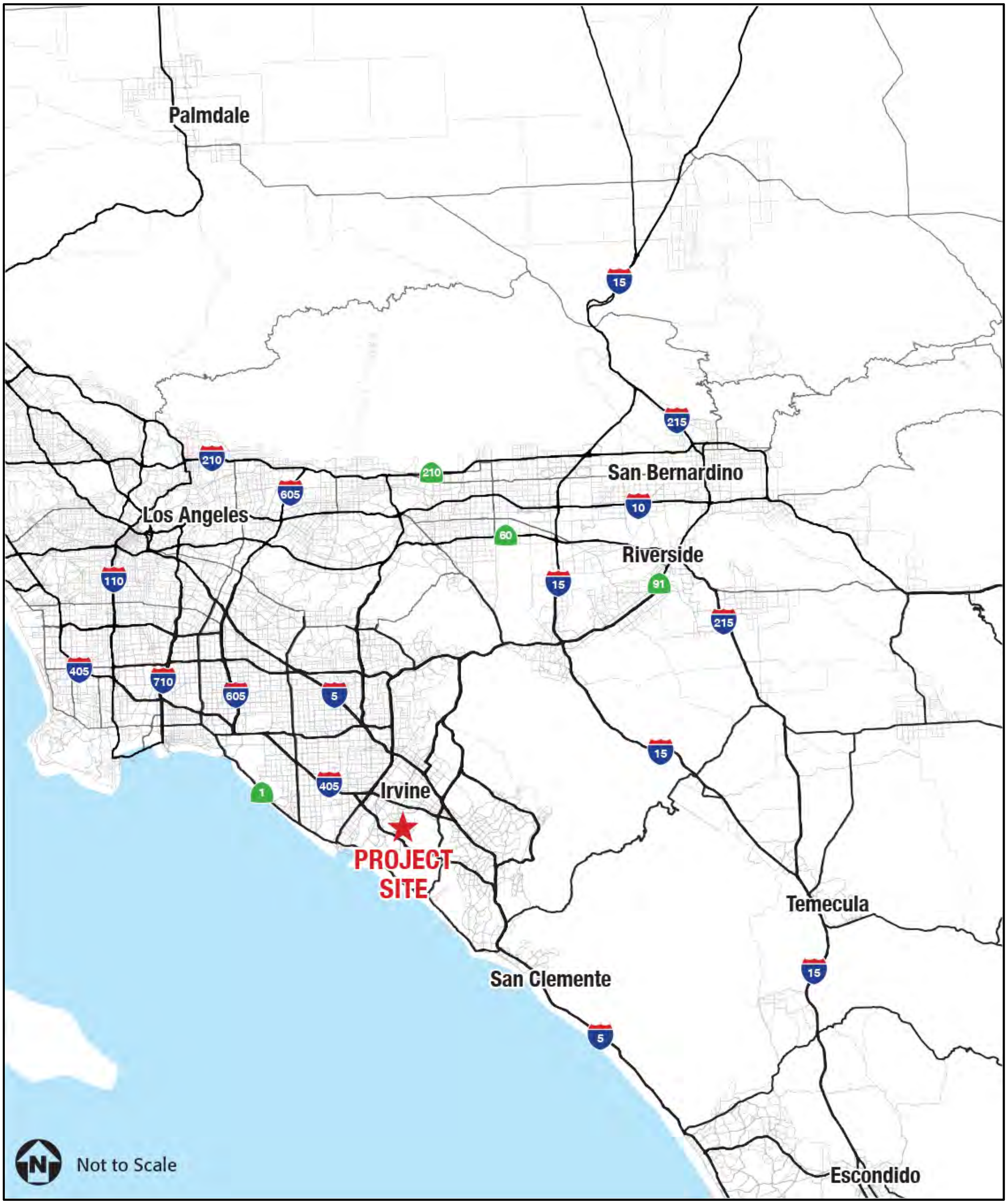


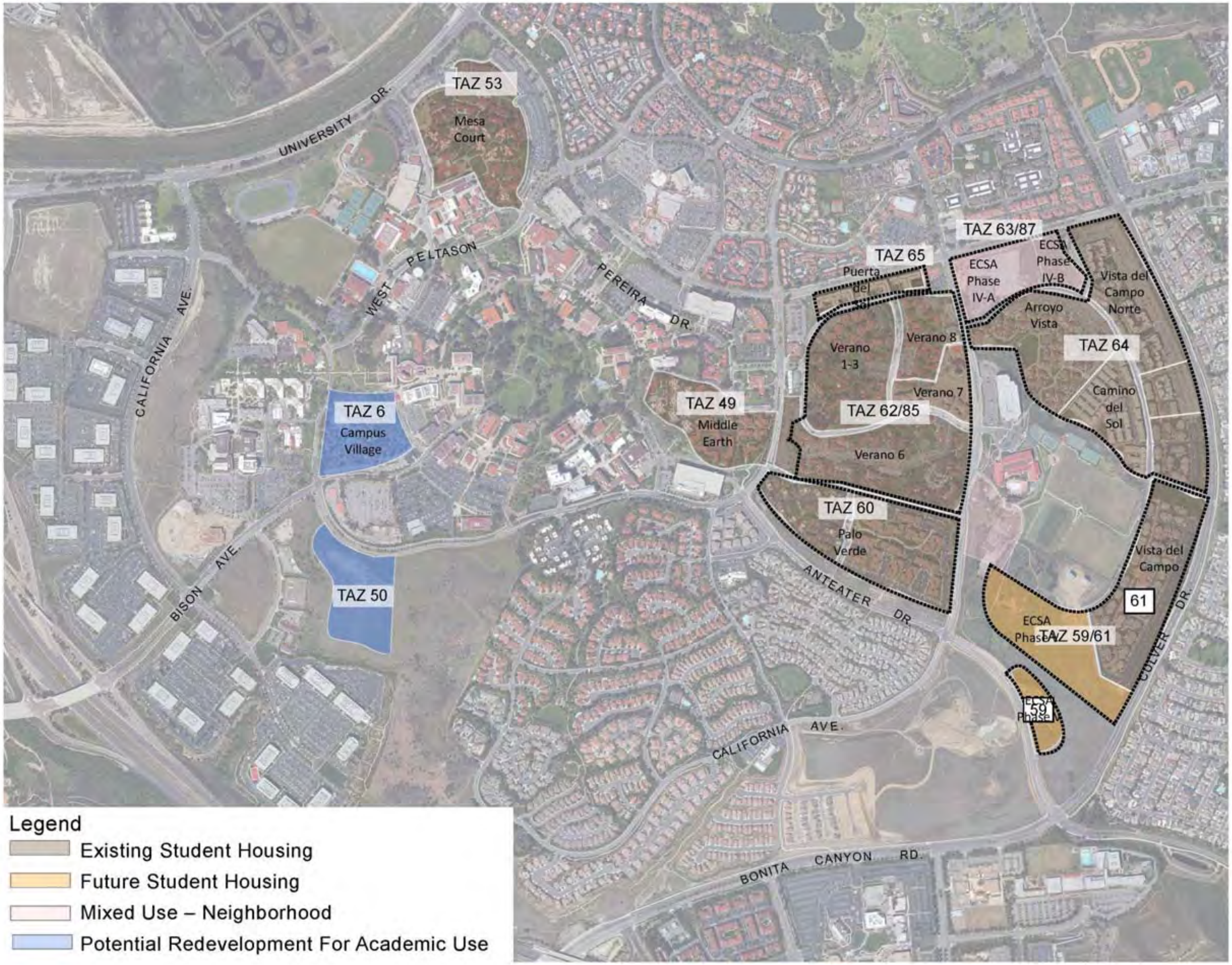
Exhibit 2: Site Vicinity

Source: Google Maps, 2019.

Exhibit 3: Site Plan

Source: University of California Irvine, 2019.

Exhibit 4: LRDP Student Housing



2 ENVIRONMENTAL SETTING

2.1 CLIMATE AND METEOROLOGY

The California Air Resources Board (CARB) divides the State into 15 air basins that share similar meteorological and topographical features. The Project is located within the 6,645-square-mile South Coast Air Basin (SCAB), which includes the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, as well as all of Orange County. The SCAB is on a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean on the southwest and high mountains forming the remainder of the perimeter[1]. The SCAB's air quality is determined by natural factors such as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. These factors along with applicable regulations are discussed below.

The SCAB is part of a semi-permanent high-pressure zone in the eastern Pacific. As a result, the climate is mild and tempered by cool sea breezes. This usually mild weather pattern is occasionally interrupted by periods of extreme heat, winter storms, and Santa Ana winds. The annual average temperature throughout the SCAB ranges from low 60 to high 80 degrees Fahrenheit with little variance. With more oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas.

Contrasting the very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all annual rainfall occurs between the months of November and April. Summer rainfall is reduced to widely scattered thundershowers near the coast, with slightly heavier activity in the east and over the mountains.

Although the SCAB has a semiarid climate, the air closer to the Earth's surface is typically moist because of the presence of a shallow marine layer. Except for occasional periods when dry, continental air is brought into the SCAB by offshore winds, the "ocean effect" is dominant. Periods of heavy fog are frequent and low clouds known as high fog are characteristic climatic features, especially along the coast. Annual average humidity is 70 percent at the coast and 57 percent in the SCAB's eastern portions.

Wind patterns across the SCAB are characterized by westerly or southwesterly on-shore winds during the day and easterly or northeasterly breezes at night. Wind speed is typically higher during the dry summer months than during the rainy winter.

Between periods of wind, air stagnation may occur in both the morning and evening hours. Air stagnation is one of the critical determinants of air quality conditions on any given day. During winter and fall, surface high-pressure systems over the SCAB, combined with other meteorological conditions, result in very strong, downslope Santa Ana winds. These winds normally continue for a few days before predominant meteorological conditions are reestablished.

The mountain ranges to the east affect the diffusion of pollutants by inhibiting the eastward transport of pollutants. The SCAB's air quality generally ranges from fair to poor and is like air quality in most of coastal

[1] South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 1993.

Southern California. The entire region experiences heavy concentrations of air pollutants during prolonged periods of stable atmospheric conditions.

In addition to the characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, two distinct types of temperature inversions control the vertical depth through which air pollutants are mixed. These inversions are the marine inversion and the radiation inversion. The height of the base of the inversion at any given time is called the "mixing height." The combination of winds and inversions is a critical determinant leading to highly degraded air quality for the SCAB in the summer and generally good air quality in the winter.

2.2 AIR POLLUTANTS OF CONCERN

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state laws. These regulated air pollutants are known as "criteria air pollutants" and are categorized into primary and secondary pollutants.

Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxide (NO_X), sulfur dioxide (SO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead are primary air pollutants. Of these, CO, NO_X, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants. ROG and NO_X are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. For example, the criteria pollutant ozone (O_3) is formed by a chemical reaction between ROG and NO_X in the presence of sunlight. O_3 and nitrogen dioxide (NO_2) are the principal secondary pollutants. Sources and health effects commonly associated with criteria pollutants are summarized in Table 1: Air Contaminants and Associated Public Health Concerns.

Table 1: Air Contaminants and Associated Public Health Concerns

Pollutant	Major Man-Made Sources	Human Health Effects
Particulate Matter (PM_{10} and $PM_{2.5}$)	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; asthma; chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility.
Ozone (O_3)	Formed by a chemical reaction between reactive organic gases/volatile organic compounds (ROG or VOC)[1] and nitrogen oxides (NO_X) in the presence of sunlight. Motor vehicle exhaust industrial emissions, gasoline storage and transport, solvents, paints and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
Sulfur Dioxide (SO_2)	A colorless gas formed when fuel containing sulfur is burned and when gasoline is extracted from oil. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.

Table 1: Air Contaminants and Associated Public Health Concerns

Pollutant	Major Man-Made Sources	Human Health Effects
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone. Contributes to global warming and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Lead (Pb)	Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Due to the phase out of leaded gasoline, metals processing is the major source of lead emissions to the air today. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.	Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children, resulting in learning deficits and lowered IQ.

Notes:
[1] Volatile Organic Compounds (VOCs or ROGs) are hydrocarbons/organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases including ROGs and VOCs. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation).

Source: California Air Pollution Control Officers Association, *Health Effects*, www.capcoa.org/health-effects, accessed June 6, 2019.

Toxic Air Contaminants

Toxic air contaminants (TACs) are airborne substances that can cause short-term (acute) or long-term (chronic or carcinogenic, i.e. cancer causing) adverse human health effects (i.e. injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes more than 200 compounds, including particulate emissions from diesel-fueled engines.

CARB identified diesel particulate matter (DPM) as a toxic air contaminant. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particles and gases produced when an engine burns diesel fuel. DPM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. DPM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of DPM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine. Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, light-headedness, and nausea. DPM poses the greatest health risk among the TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and trapped in the bronchial and alveolar regions of the lung.

Ambient Air Quality

CARB monitors ambient air quality at approximately 250 air monitoring stations across the state. Air quality monitoring stations usually measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Existing levels of ambient air quality, historical trends, and projections near the Project site are documented by measurements made by the South Coast Air Quality Management District (SCAQMD), the SCAB's air pollution regulatory agency that maintains air quality monitoring stations, which process ambient air quality measurements.

O_3, NO_2, PM_{10}, and $PM_{2.5}$ are pollutants of concern in the SCAB. The closest air monitoring station to the Project site that monitors ambient concentrations for O_3 and NO_2 is the Costa Mesa – Mesa Verde Drive Monitoring Station (located approximately 5.2 miles northwest of the Project). The closest monitoring station that measures PM_{10} and $PM_{2.5}$ is the Mission Viejo – 26081 Via Pera Monitoring Station (located approximately 8.9 miles east of the Project). Local air quality data from 2015 to 2017 are provided in Table 2: Ambient Air Quality Data. Table 2 lists the monitored maximum concentrations and number of exceedances of federal or state air quality standards for each year.

Table 2: Ambient Air Quality Data

Pollutant	2015	2016	2017
Ozone (O_3)[1]			
1-hour Maximum Concentration (ppm)	0.099	0.090	0.088
8-hour Maximum Concentration (ppm)	0.079	0.068	0.075
Number of Days Standard Exceeded			
CAAQS 1-hour (>0.09 ppm)	1	0	0
NAAQS 8-hour (>0.070 ppm)	2	0	4
Carbon Monoxide (CO)[1]			
1-hour Maximum Concentration (ppm)	2.98	2.06	1.72
Number of Days Standard Exceeded			
NAAQS 1-hour (>35 ppm)	0	0	0
CAAQS 1-hour (>20 ppm)	0	0	0
Nitrogen Dioxide (NO_2)[1]			
1-hour Maximum Concentration (ppm)	52.4	59.8	45.3
Number of Days Standard Exceeded			
NAAQS 1-hour (>100 ppm)	52	51	–
CAAQS 1-hour (>0.18 ppm)	60	60	60
Particulate Matter Less Than 10 Microns (PM_{10})[2]			
National 24-hour Maximum Concentration	49.0	59.0	58.2
State 24-hour Maximum Concentration	48.0	59.3	58.2
State Annual Average Concentration (20 μg/m^3)	–	–	18.8
Number of Days Standard Exceeded			
NAAQS 24-hour (>150 μg/m^3)	–	0	0
CAAQS 24-hour (>50 μg/m^3)	–	–	7
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)[2]			
National 24-hour Maximum Concentration	31.5	24.7	19.5
State 24-hour Maximum Concentration	31.5	24.7	19.5
Number of Days Standard Exceeded			
NAAQS 24-hour (>35 μg/m^3)	0	0	–

Notes: NAAQS = National Ambient Air Quality Standards; CAAQS = California Ambient Air Quality Standards; ppm = parts per million; μg/m^3 = micrograms per cubic meter; NM = not measured

1 Measurements at Costa Mesa – Mesa Verde Drive Monitoring Station, 2850 Mesa Verde Drive East, Costa Mesa, CA 92626 (CARB# 70112).

2 Measurements at Mission Viejo – 26081 Via Pera Monitoring Station, 26081 Via Pera, Mission Viejo, CA 92691 (CARB# 30002).

Source: Pollutant measurements from the CARB Aerometric Data Analysis and Management system database (https://www.arb.ca.gov/adam), accessed June 5, 2019.

2.3 SENSITIVE RECEPTORS

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive receptors in proximity to localized sources of toxics are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Sensitive land uses surrounding the Project site consist mostly of low to medium-high density residences, educational institutions, and recreational facilities. Table 3: Sensitive Receptors, lists the distances and locations of sensitive receptors within the Project vicinity.

Table 3: Sensitive Receptors

Receptor Description	Distance and Direction from Project
UCI Infant-Toddler Center	Adjacent to the feet east
UCI Campus Housing	Adjacent to the feet north
UCI Campus Housing	Adjacent to the feet south
Verano Place Housing	Adjacent to the feet west
Arroyo Vista Housing	160 to the feet east
Cornell Court Apartments	380 to the feet northeast
Multi-Residential Neighborhood	680 to the feet northeast
Harvard Court Apartments	730 to the feet northwest
UCI Campus Recreation	900 to the feet southeast
Palo Verde Housing	1,170 to the feet south
Berkeley Court Apartments	1,180 to the feet northwest
UCI Educational Facilities	1,230 to the feet west
Middle Earth Housing	1,240 to the feet southwest
Shadetree Nursery	1,330 to the feet southeast
Dartmouth Court Apartments	1,420 to the feet northwest
Regents Point Assisted Living	1,630 to the feet north
Ambrose Apartment Homes	1,780 to the feet north
Single-Family Residential Neighborhood	1,880 to the feet southwest
Single-Family Residential Neighborhood	2,070 to the feet east
University High School	2,250 to the feet northeast
University Montessori School	2,250 to the feet southwest

3 REGULATORY SETTING

3.1 FEDERAL

Federal Clean Air Act

Air quality is federally protected by the Federal Clean Air Act (FCAA) and its amendments. Under the FCAA, the EPA developed the primary and secondary National Ambient Air Quality Standards (NAAQS) for the criteria air pollutants including ozone, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, and lead. Proposed projects in or near nonattainment areas could be subject to more stringent air-permitting requirements. The FCAA requires that each state prepare a State Implementation Plan (SIP) to demonstrate how it will attain the NAAQS within the federally imposed deadlines.

The U.S. Environmental Protection Agency (EPA) can withhold certain transportation funds from states that fail to comply with the FCAA's planning requirements. If a state fails to correct these planning deficiencies within two years of Federal notification, the EPA is required to develop a Federal implementation plan for the identified nonattainment area or areas. The provisions of 40 Code of Federal Regulations Parts 51 and 93 apply in all nonattainment and maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan. The EPA has designated enforcement of air pollution control regulations to the individual states. Applicable federal standards are summarized in Table 4: State and Federal Ambient Air Quality Standards.

3.2 STATE OF CALIFORNIA

California Air Resources Board

CARB administers California's air quality policy. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 4, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates.

The California Clean Air Act (CCAA), which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with CAAQS. These AQMPs also serve as the basis for the preparation of the SIP for meeting federal clean air standards for the State of California. Like the EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events such as wildfires, volcanoes, etc. are not considered violations of a State standard, and are not used as a basis for designating areas as nonattainment. The applicable State standards are summarized in Table 4.

Table 4: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standards[1]	Federal Standards[2]
Ozone (O_3) [2, 5, 7]	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm
	1 Hour	0.09 ppm (180 µg/m^3)	NA
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	0.10 ppm[11]
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2) [8]	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)
	Annual Arithmetic Mean	NA	0.03 ppm (80 µg/m^3)
Particulate Matter (PM_{10}) [1, 3, 6]	24-Hour	50 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3	NA
Fine Particulate Matter ($PM_{2.5}$) [3, 4, 6, 9]	24-Hour	NA	35 µg/m^3
	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3
Sulfates (SO_{4-2})	24 Hour	25 µg/m^3	NA
Lead (Pb) [10, 11]	30-Day Average	1.5 µg/m^3	NA
	Calendar Quarter	NA	1.5 µg/m^3
	Rolling 3-Month Average	NA	0.15 µg/m^3
Hydrogen Sulfide (H_2S)	1 Hour	0.03 ppm (0.15 µg/m^3)	NA
Vinyl Chloride (C_2H_3Cl) [10]	24 Hour	0.01 ppm (26 µg/m^3)	NA

Notes:
ppm = parts per million; µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; – = no information available

1 California standards for ozone, CO (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), NO_2, suspended particulate matter - PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe CO, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e. all standards except for lead and the PM_{10} annual standard), then some measurements may be excluded. Measurements are excluded that CARB determines would occur less than once per year on the average. The Lake Tahoe CO standard is 6.0 ppm, a level one-half the national standard and two-thirds the state standard.

2 National standards shown are the "primary standards" designed to protect public health. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.070 ppm or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m$_3$. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m^3.

3 Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard. NAAQS are set by the EPA at levels determined to be protective of public health with an adequate margin of safety.

4 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. An area will meet the standard if the fourth-highest maximum daily 8-hour ozone concentration per year, averaged over three years, is equal to or less than 0.070 ppm. EPA will make recommendations on attainment designations by October 1, 2016, and issue final designations October 1, 2017. Nonattainment areas will have until 2020 to late 2037 to meet the health standard, with attainment dates varying based on the ozone level in the area.

5 The national 1-hour ozone standard was revoked by the EPA on June 15, 2005.

6 In June 2002, CARB established new annual standards for $PM_{2.5}$ and PM_{10}.

7 The 8-hour California ozone standard was approved by the CARB on April 28, 2005 and became effective on May 17, 2006.

8 On June 2, 2010, the EPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO_2 NAAQS however must continue to be used until one year following EPA initial designations of the new 1-hour SO_2 NAAQS.

9 In December 2012, EPA strengthened the annual $PM_{2.5}$ NAAQS from 15.0 to 12.0 µg/m^3. In December 2014, the EPA issued final area designations for the 2012 primary annual $PM_{2.5}$ NAAQS. Areas designated “unclassifiable/attainment” must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.

10 CARB has identified lead and vinyl chloride as ‘toxic air contaminants’ with no threshold level of exposure below which there are no adverse health effects determined.

11 National lead standard, rolling 3-month average: final rule signed October 15, 2008. Final designations effective December 31, 2011.

Source: South Coast Air Quality Management District, *Air Quality Management Plan*, 2016; California Air Resources Board, *Ambient Air Quality Standards*, May 6, 2016.

3.3 REGIONAL

South Coast Air Quality Management District

The SCAQMD is the air pollution control agency for Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino Counties. The agency's primary responsibility is ensuring that federal and state ambient air quality standards are attained and maintained in the SCAB. The SCAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, and many other activities. All projects are subject to SCAQMD rules and regulations in effect at the time of construction.

The SCAQMD is also the lead agency in charge of developing the AQMP, with input from the Southern California Association of Governments (SCAG) and CARB. The AQMP is a comprehensive plan that includes control strategies for stationary and area sources, as well as for on-road and off-road mobile sources. SCAG has the primary responsibility for providing future growth projections and the development and implementation of transportation control measures. CARB, in coordination with federal agencies, provides the control element for mobile sources.

The 2016 AQMP was adopted by the SCAQMD Governing Board on March 3, 2017. The purpose of the AQMP is to set forth a comprehensive and integrated program that would lead the SCAB into compliance with the federal 24-hour $PM_{2.5}$ air quality standard, and to update the SCAQMD's commitments towards meeting the federal 8-hour ozone standards. The AQMP incorporates the latest scientific and technological information and planning assumptions, including the 2016 *Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS) and updated emission inventory methodologies for various source categories.

The SCAQMD has published the *CEQA Air Quality Handbook* (approved by the SCAQMD Governing Board in 1993 and augmented with guidance for Local Significance Thresholds [LST] in 2008). The SCAQMD guidance helps local government agencies and consultants develop environmental documents required by California Environmental Quality Act (CEQA) and identifies thresholds of significance for criteria pollutants for both construction and operation (see discussion of thresholds below). With the help of the *CEQA Air Quality Handbook* and associated guidance, local land use planners and consultants can analyze and document how existing and proposed projects affect air quality, in order to meet the CEQA review process requirements. The SCAQMD periodically provides supplemental guidance and updates to the handbook on their website.

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. Under federal law, SCAG is designated as a Metropolitan Planning Organization and under state law as a Regional Transportation Planning Agency and a Council of Governments.

The state and national attainment status designations for the SCAB are summarized in Table 5: South Coast Air Basin Attainment Status. The SCAB is currently designated as a nonattainment area concerning the state ozone, PM_{10}, and $PM_{2.5}$ standards, as well as the national 8-hour ozone and $PM_{2.5}$ standards. The SCAB is designated as attainment or unclassified for the remaining state and federal standards.

Table 5: South Coast Air Basin Attainment Status

Pollutant	Federal	State
Ozone (O_3) (1 Hour Standard)	Non-Attainment (Extreme)	Non-Attainment
Ozone (O_3) (8 Hour Standard)	Non-Attainment (Extreme)	Non-Attainment
Particulate Matter ($PM_{2.5}$) (24 Hour Standard)	Non-Attainment (Serious)	--
Particulate Matter ($PM_{2.5}$) (Annual Standard)	Non-Attainment (Moderate)	Non-Attainment
Particulate Matter (PM_{10}) (24 Hour Standard)	Attainment (Maintenance)	Non-Attainment
Particulate Matter (PM_{10}) (Annual Standard)	--	Non-Attainment
Carbon Monoxide (CO) (1 Hour Standard)	Attainment (Maintenance)	Attainment
Carbon Monoxide (CO) (8 Hour Standard)	Attainment (Maintenance)	Attainment
Nitrogen Dioxide (NO_2) (1 Hour Standard)	Unclassifiable/Attainment	Attainment
Nitrogen Dioxide (NO_2) (Annual Standard)	Attainment (Maintenance)	Attainment
Sulfur Dioxide (SO_2) (1 Hour Standard)	Unclassifiable/Attainment	Attainment
Sulfur Dioxide (SO_2) (24 Hour Standard)	--	Attainment
Lead (Pb) (30 Day Standard)	Unclassifiable/Attainment	--
Lead (Pb) (3 Month Standard)	--	Attainment
Sulfates (SO_{4-2}) (24 Hour Standard)	--	Attainment
Hydrogen Sulfide (H_2S) (1 Hour Standard)	--	Unclassified

Source: South Coast Air Quality Management District, *Air Quality Management Plan*, 2016; U.S. EPA, *Nonattainment Areas for Criteria Pollutants (Green Book)*, June 2019.

The following SCAQMD rules apply to construction activities associated with the Project:

- **Rule 402 (Nuisance)** – This rule prohibits the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. This rule does not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

- **Rule 403 (Fugitive Dust)** – This rule requires fugitive dust sources to implement best available control measures for all sources, and all forms of visible particulate matter are prohibited from crossing any property line. This rule is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. PM_{10} suppression Best Available Control Measures are summarized below.

a) Portions of a construction site to remain inactive longer than a period of three months will be seeded and watered until grass cover is grown or otherwise stabilized.

b) All on-site roads will be paved as soon as feasible or watered periodically or chemically stabilized.

c) All material transported off-site will be either sufficiently watered or securely covered to prevent excessive amounts of dust.

d) The area disturbed by clearing, grading, earthmoving, or excavation operations will be minimized at all times.

e) Where vehicles leave a construction site and enter adjacent public streets, the streets will be swept daily or washed down at the end of the work day to remove soil tracked onto the paved surface.

3.4 LOCAL

Environmental Health and Safety Department

UCI's Environmental Health and Safety (EHS) Department is responsible for implementing the UCI Clean Air Program which facilitates compliance with air quality laws and regulations. In addition to the permitting programs required by California law and SCAQMD rules, UCI is required to implement a Federal operating permit program that meets EPA regulations adopted pursuant to Title V of the FCAA Amendments. Title V Program activities include assisting with SCAQMD Permit to Operate administration, monitoring, record keeping, reporting activities, and developing regulatory programs and informational guidelines to ensure the campus remains in compliance with State and Federal regulations.

Several different departments at UCI are involved with this program. Academic department chairs and directors are responsible for reporting new air emission sources to EHS and maintaining records. The Facilities Management and the Design and Construction Services departments provide building and renovation plans to EHS for review and report new air emission sources to EHS. The Parking and Transportation Services department, while not directly involved with the Clean Air Program, reduces air emissions by implementing the Alternative Transportation Program to reduce vehicular traffic and associated emissions.

4 SIGNIFICANCE CRITERIA AND METHODOLOGY

4.1 AIR QUALITY THRESHOLDS

Based upon the criteria derived from CEQA Guidelines Appendix G, a project normally would have a significant effect on the environment if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable Federal or State ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

South Coast Air Quality Management District Thresholds

The SCAQMD significance criteria may be relied upon to make the above determinations. According to the SCAQMD, an air quality impact is considered significant if a proposed project would violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. The SCAQMD has established thresholds of significance for air quality during project construction and operations, as shown in Table 6: South Coast Air Quality Management District Emissions Thresholds.

Table 6: South Coast Air Quality Management District Emissions Thresholds (Average Pounds per Day)

Criteria Air Pollutants	Construction-Related	Operational-Related
Reactive Organic Gases (ROG)	75	55
Carbon Monoxide (CO)	550	550
Nitrogen Oxides (NO_X)	100	55
Sulfur Oxides (SO_X)	150	150
Coarse Particulates (PM_{10})	150	150
Fine Particulates ($PM_{2.5}$)	55	55

Source: South Coast Air Quality Management District, *CEQA Air Quality Handbook,* 1993 ($PM_{2.5}$ threshold adopted June 1, 2007).

Localized Carbon Monoxide

In addition to the daily thresholds listed above, the Project would be subject to the ambient air quality standards. These are addressed through an analysis of localized CO impacts. The significance of localized impacts depends on whether ambient CO levels near the Project site are above State and Federal CO standards (the more stringent California standards are 20 ppm for 1-hour and 9 ppm for 8-hour). The SCAB has been designated as attainment under the 1-hour and 8-hour standards.

Localized Significance Thresholds

In addition to the CO hotspot analysis, the SCAQMD developed localized significance thresholds (LSTs) for emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ generated at new development sites (off-site mobile source emissions are not included in the LST analysis). LSTs represent the maximum emissions that can be generated at a project site without expecting to cause or substantially contribute to an exceedance of the most stringent national or state ambient air quality standards. LSTs are based on the ambient concentrations of that pollutant within the Project source receptor area (SRA), as demarcated by the SCAQMD, and the distance to the nearest sensitive receptor. LST analysis for construction is applicable for all projects that disturb 5.0 acres or less on a single day. The Project is located within SCAQMD SRA 20 (Central Orange County Coastal). Table 7: Local Significance Thresholds (Construction/Operations), shows the LSTs for a 1-acre, 2-acre, and 5-acre project site in SRA 20 with sensitive receptors located within 25 meters of the Project site.

Table 7: Local Significance Thresholds for Construction/Operations (Maximum Pounds per Day)

Project Size	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulates (PM_{10})	Fine Particulates ($PM_{2.5}$)
1 Acre	92/92	639/639	4/1	3/1
2 Acres	131/131	945/945	7/2	5/2
5 Acres	197/197	1,711/1,711	14/4	9/2

Source: South Coast Air Quality Management District, *Localized Significance Threshold Methodology,* July 2008.

4.2 METHODOLOGY

This air quality impact analysis considers construction and operational impacts associated with the Project. Construction equipment, trucks, worker vehicles, and ground-disturbing activities associated with Project construction would generate emissions of criteria air pollutants and precursors. Air quality impacts were assessed according to CARB and SCAQMD recommended methodologies. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model version 2016.3.2 (CalEEMod). CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects.

5 POTENTIAL IMPACTS AND MITIGATION

5.1 AIR QUALITY ANALYSIS

Threshold 5.1 Would the Project conflict with or obstruct implementation of the applicable air quality plan?

As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a SIP that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the CCAA requires an air quality attainment plan to be prepared for areas designated as nonattainment regarding the federal and state ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

The Project site is located within the SCAB, which is under SCAQMD's jurisdiction. The SCAQMD is required, pursuant to the FCAA, to reduce emissions of criteria pollutants for which the SCAB is in nonattainment. To reduce such emissions, the SCAQMD drafted the 2016 AQMP. The 2016 AQMP establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving State (California) and Federal air quality standards. The 2016 AQMP is a regional and multi-agency effort including the SCAQMD, the CARB, the SCAG, and the EPA. The AQMP's pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including SCAG's 2016 RTP/SCS, updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts. SCAG's latest growth forecasts were defined in consultation with local governments and with reference to local general plans. The Project is subject to the SCAQMD's AQMP. Criteria for determining consistency with the AQMP are defined by the following indicators:

- **Consistency Criterion No. 1**: The Project would not result in an increase in the frequency or severity of existing air quality violations, or cause or contribute to new violations, or delay the timely attainment of the AQMP's air quality standards or the interim emissions reductions.
- **Consistency Criterion No. 2**: The Project would not exceed the AQMP's assumptions or increments based on the years of the Project build-out phase.

Verano 8 Graduate Student Housing

According to the SCAQMD's *CEQA Air Quality Handbook*, the purpose of the consistency finding is to determine if a project is inconsistent with the assumptions and objectives of the regional air quality plans, and thus if it would interfere with the region's ability to comply with CAAQS and NAAQS.

The violations to which Consistency Criterion No. 1 refers are CAAQS and NAAQS. As shown in Table 8 and Table 9 below, the Verano 8 Graduate Student Housing Project would not exceed the short-term construction standards or long-term operational standards and would therefore not violate any air quality standards. Thus, no impact is expected, and the Project would be consistent with the first criterion.

Concerning Consistency Criterion No. 2, the AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts, and SCAG's growth forecasts were defined in consultation with local governments and with reference to local general plans.

The Project is expected to bring 1,200 graduate student residents onto campus and reduce the number of students currently commuting to campus. The change would accommodate anticipated planned growth and would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by essentially providing infill residential development on the campus and reducing the need to travel from off-site locations. The Project would be consistent with the *Strategic Plan*[2] and would not require a zone change or a City of Irvine *General Plan* (General Plan) amendment. The growth of the total student body at UCI is already anticipated in the General Plan (and accordingly the projections within the AQMP). Additionally, it would not cause the SCAQMD's population or job growth projections used to develop the AQMP to be exceeded. The Project also supports SCAG RTP/SCS and SCAQMD policies promoting infill development to reduce emissions. Thus, a less than significant impact would occur, as the Project is also consistent with the second criterion.

LRDP Student Housing Amendment

The LRDP EIR found less than significant impacts related to consistency with the AQMP. UCI is proposing to amend its existing 2007 *Long Range Development Plan*[3] (LRDP) to increase its on-campus student housing capacity from 50 percent to 60 percent of student enrollment. Changes in land use designations from student housing to academic support are proposed at two sites on the campus; the six-acre parcel in the Academic Core from Academic and Support to Student Housing and the 12-acre parcel in the West Campus from Student Housing to Academic and Support. The Campus Village would ultimately be redeveloped at a higher density. Higher building densities across the campus would accommodate the LRDP Amendment's increased bed capacity and the 12-acre parcel in the West Campus is no longer needed for student housing. No changes to student enrollment or the Academic and Support square footage capacity that was previously analyzed in the 2007 LRDP EIR would occur. As with the Verano 8 Graduate Student Housing project, the LRDP Student Housing Amendment changes would accommodate anticipated planned growth and would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by essentially providing infill residential development on the campus and reducing the need to travel from off-site locations.

Therefore, no new impact relative to AQMP consistency or a substantial increase in the severity of a previously identified significant impact evaluated in the Final EIR would occur. Additionally, no new information of substantial importance that was not known and could not have been known at the time the Final EIR was certified is available that would change the significance determination in the Final EIR.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

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2 University of California, Irvine, *Strategic Plan*, 2016.
3 University of California, Irvine, *Long Range Development Plan*, 2007.

Threshold 5.2 Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable Federal or State ambient air quality standard?

Verano 8 Graduate Student Housing

Construction Emissions

Project construction activities would generate short-term emissions of criteria air pollutants. The criteria pollutants of primary concern within the Project area include ozone-precursor pollutants (i.e. ROG and NO_x) and PM_{10} and $PM_{2.5}$. Construction-generated emissions are short term and temporary, lasting only while construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the SCAQMD's thresholds of significance.

Construction results in the temporary generation of emissions resulting from site grading, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment, especially on unpaved surfaces. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities, as well as weather conditions and the appropriate application of water.

The duration of construction activities associated with the Project are estimated to last up to 26 months. The Project is anticipated to require a net cut of approximately 14,000 cy of soil. Construction-related emissions were calculated using CalEEMod, which is designed to model emissions for land use development projects, based on typical construction requirements. See Appendix A: Air Quality Data for more information regarding the construction assumptions used in this analysis. The Project's predicted maximum daily construction-related emissions are summarized in Table 8: Construction-Related Emissions. As shown in Table 8, all criteria pollutant emissions would remain below their respective thresholds. While impacts would be considered less than significant, the Project would be subject to compliance with SCAQMD Rules 402 and 403, described in the Regulatory Setting above, to further reduce specific construction-related emissions.

Table 8: Construction-Related Emissions (Maximum Pounds Per Day)

Construction Year	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2020	4.64	51.01	35.26	0.11	10.11	6.32
2021	4.23	30.02	34.47	0.11	6.92	2.55
2022	64.84	27.47	33.17	0.11	6.77	2.40
SCAQMD Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: SCAQMD Rule 403 Fugitive Dust applied. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stock piles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SCAQMD CEQA Handbook (Tables XI-A through XI-E) were applied. No mitigation was applied to construction equipment. Refer to Appendix A for Model Data Outputs.

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

Operational Emissions

The Project's operational emissions would be associated with motor vehicle use and area sources, such as the use of landscape maintenance equipment and architectural coatings. Long-term operational emissions attributable to the Project are summarized in Table 9: Verano 8 – Operational Emissions. Note that emissions rates differ from summer to winter because weather factors are dependent on the season and these factors affect pollutant mixing, dispersion, ozone formation, and other factors. As shown in Table 9**,** the Project's operational emissions would not exceed SCAQMD thresholds for any criteria air pollutants. Therefore, the Project's operational emissions would result in a less than significant long-term regional air quality impact.

Table 9: Verano 8 – Operational Emissions (Maximum Pounds Per Day)

Emission Source	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Summer Emissions						
Area	12.80	0.38	33.14	0.00	0.18	0.18
Energy	0.12	1.04	0.47	0.00	0.08	0.08
Mobile	1.95	6.6	16.64	0.05	4.71	1.29
Total	**14.88**	**8.03**	**50.26**	**0.06**	**4.98**	**1.55**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Winter Emissions						
Area	12.80	0.38	33.14	0.00	0.18	0.18
Energy	0.12	1.04	0.47	0.00	0.08	0.08
Mobile	1.92	6.67	16.68	0.05	4.71	1.29
Total	**14.84**	**8.10**	**50.29**	**0.06**	**4.98**	**1.56**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

Area Source Emissions. Area Source Emissions would be generated due to consumer products, architectural coating, and landscaping that were previously not present on the site. As shown in Table 9, the Project's unmitigated area source emissions would not exceed SCAQMD thresholds for either the winter or summer seasons. Therefore, mitigation measures are not required, and a less than significant impact is anticipated.

Energy Source Emissions. Energy source emissions would be generated due to the Project's electricity and natural gas usage. The Project's primary uses of electricity and natural gas would be for space heating and cooling, water heating, ventilation, lighting, appliances, and electronics. As shown in Table 9, the Project's unmitigated energy source emissions would not exceed SCAQMD thresholds for criteria pollutants. As such, the Project would not violate any air quality standards or contribute substantially to an existing or projected air quality violation. Therefore, the Project's operational air quality impacts would be less than significant.

Mobile Source Emissions. Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_X, PM_{10}, and $PM_{2.5}$ are all pollutants of regional concern. NO_X and ROG react with sunlight to form O_3, known as photochemical smog. Additionally, wind currents readily transport PM_{10} and $PM_{2.5}$. However, CO tends to be a localized pollutant, dispersing rapidly at the source.

Project-generated vehicle emissions were estimated using CalEEMod, as recommended by the SCAQMD. The Project's trip generation estimates were based on trip generation rates for graduate student housing from the *UCI Verano 8 Student Housing Project and LRDP Housing Amendment Traffic Study*. The Project would generate approximately 1,800 average daily trips (ADT). As shown in Table 9, mobile source emissions would not exceed SCAQMD thresholds for criteria pollutants. Therefore, impacts associated with mobile source emissions would be less than significant.

Cumulative Emissions

Cumulative Construction Emissions. The SCAB is designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$ for State standards and nonattainment for O_3 and $PM_{2.5}$ for Federal standards. As discussed above, the Project's construction-related emissions by themselves would not exceed the SCAQMD significance thresholds for criteria pollutants.

Since these thresholds indicate whether individual Project emissions have the potential to affect cumulative regional air quality, it can be expected that the Project-related construction emissions would not be cumulatively considerable. The SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the AQMP pursuant to the federal Clean Air Act mandates. The analysis assumed fugitive dust controls would be utilized during construction, including frequent water applications. SCAQMD rules, mandates, and compliance with adopted AQMP emissions control measures would also be imposed on construction projects throughout the SCAB, which would include related cumulative projects. As concluded above, the Project's construction-related impacts would be less than significant. Compliance with SCAQMD rules and regulations would further minimize the Project's construction-related emissions. Therefore, Project-related construction emissions, in combination with those from other projects in the area, would not substantially deteriorate the local air quality. The Project's construction-related emissions would not result in a cumulatively considerable contribution to significant cumulative air quality impacts.

Cumulative Operational Impacts. The SCAQMD has not established separate significance thresholds for cumulative operational emissions. The nature of air emissions is largely a cumulative impact. As a result, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, individual project emissions contribute to existing cumulatively significant adverse air quality impacts. The SCAQMD developed the operational thresholds of significance based on the level above which individual project emissions would result in a cumulatively considerable contribution to the SCAB's existing air quality conditions. Therefore, a project that exceeds the SCAQMD operational thresholds would also be a cumulatively considerable contribution to a significant cumulative impact.

As shown in Table 9, the Project's operational emissions would not exceed SCAQMD thresholds. As a result, the Project's operational emissions would not result in cumulatively considerable contribution to significant cumulative air quality impacts. Adherence to SCAQMD rules and regulations would alleviate potential impacts related to cumulative conditions on a project-by-project basis. Project operations would not contribute cumulatively considerable net increase of nonattainment criteria pollutants.

LRDP Student Housing Amendment

Construction and Operational Impacts. The LRDP EIR anticipated future development within the Campus and predicted maximum air quality impacts based on worst-case assumptions. The 2007 LRDP designated growth for up to 17,637 beds. The proposed Housing Amendment would increase the total capacity to 22,350 beds, an increase of 4,713 beds in graduate and undergraduate housing. The LRDP EIR determined that worst-case construction scenario and operational emissions from future projects associated with implementation of the 2007 LRDP would exceed SCAQMD significance thresholds for CO, VOCs, NO_X, PM_{10}, and $PM_{2.5}$. However, individual construction projects may or may not result in significant impacts, depending on the project size and features.

To analyze the LRDP Student Housing Amendment, the 4,713 beds were assumed to result in 1,185,000 square feet of residential space. The main source of air pollutant emissions during operations is from motor vehicles. Based on the *UCI Verano 8 Student Housing Project and LRDP Housing Amendment Traffic Study* (Stantec, June 2019), the LRDP Student Housing Amendment would generate 4,951 daily vehicle trips. Operational emissions associated with the LDRP Student Housing Amendment are summarized in Table 10: LRDP Student Housing Amendment – Operational Emissions. Table 10 shows that operational emissions would not exceed SCAQMD thresholds.

Table 10: LRDP Student Housing Amendment – Operational Emissions (Maximum Pounds Per Day)

Emission Source	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Summer Emissions						
Area	45.26	1.80	155.68	0.01	0.86	0.86
Energy	0.54	4.59	1.96	0.03	0.37	0.37
Mobile	5.59	19.41	51.77	0.18	15.50	4.23
Total	**51.39**	**25.80**	**209.40**	**0.21**	**16.73**	**5.46**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Winter Emissions						
Area	45.26	1.80	155.68	0.01	0.86	0.86
Energy	0.54	4.59	1.96	0.03	0.37	0.37
Mobile	5.50	19.67	51.34	0.17	15.50	4.23
Total	**51.30**	**26.06**	**208.98**	**0.21**	**16.73**	**5.47**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

As noted above, although the LRDP Amendment would increase the overall student housing capacity, no changes to student enrollment or the Academic and Support square footage capacity would occur. The LRDP Student Housing Amendment changes would provide infill residential development on the campus and reduce the need to travel from off-site locations, thereby reducing associated mobile source emissions.

LRDP EIR determined that operational emissions from future projects would exceed SCAQMD significance thresholds and that emissions would be significant and unavoidable despite the implementation of mitigation. Operational mitigation measures in the LRDP EIR include requiring UCI to continue implementing its alternative transportation program, complying with SCAQMD Rules, and minimizing area source emissions (e.g., cooling and heating systems, landscaping, consumer products, etc.). Table 10 shows that emissions associated with the LRDP Housing Amendment would be less than significant. Additionally, LRDP Housing Amendment operational emissions represent a small proportion of what was anticipated in the LRDP EIR and would not change the severity of impacts or require new mitigation measures. Therefore, no new impacts or a substantial increase in the severity of a previously identified significant impacts evaluated in the Final EIR would occur. Additionally, no new information of substantial importance that was not known and could not have been known at the time the Final EIR was certified is available that would change the significance determination in the Final EIR.

Cumulative Construction and Operational Impacts. The LRDP EIR determined that since construction and operational emissions would exceed SCAQMD thresholds, the impacts would also result in a cumulatively considerable air quality impact. As noted above, although the LRDP Amendment would increase the overall student housing capacity, no changes to student enrollment or the Academic and Support square footage capacity would occur. The LRDP Student Housing Amendment changes would provide infill residential development on the campus and reduce the need to travel from off-site locations, thereby reducing associated mobile source emissions.

As discussed above, SCAQMD rules, mandates, and compliance with adopted AQMP emissions control measures would also be imposed on construction projects throughout the SCAB, which would include related cumulative projects. Additionally, as shown in Table 10, the LRDP Amendment operational emissions would not exceed SCAQMD thresholds. As a result, emissions associated with the LRDP Student Housing Amendment would not result in cumulatively considerable contribution to significant cumulative air quality impacts. No new impact relative to cumulative impacts or a substantial increase in the severity of a previously identified significant impact evaluated in the Final EIR would occur. Additionally, no new information of substantial importance that was not known and could not have been known at the time the Final EIR was certified is available that would change the significance determination in the Final EIR.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold 5.3 Would the Project expose sensitive receptors to substantial pollutant concentrations?

Verano 8 Graduate Student Housing

Localized Construction Significance Analysis

The nearest sensitive receptors to the Project site are the UCI Infant-Toddler Center approximately 50 feet (16 meters) to the east and additional campus housing adjacent to the Project property line, located approximately 70 feet (21 meters) to the north, south, and west. To identify impacts to sensitive receptors, the SCAQMD recommends addressing LSTs for construction. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated June 2003, revised in 2008) for guidance. The LST methodology assists lead agencies in analyzing localized impacts from Project-specific emissions.

Since CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, Table 11: Equipment-Specific Grading Rates, is used to determine the maximum daily disturbed acreage for comparison to LSTs. The appropriate SRA for the localized significance thresholds is the Central Orange County Coastal area (SRA 20) since this area includes the Project site. LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects that disturb areas less than or equal to 5 acres. Project construction is anticipated to disturb a maximum of 3.5 acres in a single day.

Table 11: Equipment-Specific Grading Rates

Construction Phase	Equipment Type	Equipment Quantity	Acres Graded per 8-Hour Day	Operating Hours per Day	Acres Graded per Day
Grading	Tractors	3	0.5	8	1.5
	Graders	1	0.5	8	0.5
	Dozers	1	0.5	8	0.5
	Scrapers	1	1.0	8	1.0
				Total Acres Graded per Day	**3.5**

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

The SCAQMD's methodology states that "off-site mobile emissions from the Project should not be included in the emissions compared to LSTs." Therefore, for the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered. The nearest sensitive receptors to the Project site are the UCI educational facilities located approximately 30 feet (9 meters) to the north. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. Therefore, as recommended by the SCAQMD, LSTs for receptors located at 25 meters were utilized in this analysis for receptors closer than 25 meters. Table 12: Localized Significance of Construction Emissions, presents the results of localized emissions during Project construction.

Table 12: Localized Significance of Construction Emissions (Maximum Pounds Per Day)

Construction Activity	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2020 Demolition	33.20	21.75	1.73	1.55
2020 Site Preparation	42.42	21.51	9.92	6.27
2020 Grading	38.14	23.51	4.44	3.02
2020 Building Construction	19.19	16.85	1.12	1.05
2021 Building Construction	17.43	16.58	0.96	0.90
2022 Building Construction	15.62	16.36	0.81	0.76
2022 Paving	11.12	14.58	0.57	0.52
2022 Architectural Coating	1.41	1.81	0.08	0.08
SCAQMD Localized Screening Threshold (3.5 acres at 25 meters)	*164*	*1,328*	*11*	*7*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

Table 12 shows that the emissions of these pollutants on the peak day of Project construction would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, the Project would result in a less than significant impact concerning LSTs during construction activities.

Localized Operational Significance Analysis

LSTs for receptors located at 25 meters for SRA 20 were utilized in this analysis. As the Project site is 7.8 acres, the 5-acre LST threshold was conservatively used. The 5-acre LST is conservative as the thresholds increase with project size. The on-site operational emissions are compared to the LST thresholds in Table 13: Localized Significance of Operational Emissions. Table 12 shows that the maximum daily emissions of on-site pollutants during Project operations would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, the Project would result in a less than significant impact concerning LSTs during operational activities.

Table 13: Localized Significance of Operational Emissions (Maximum Pounds Per Day)

Emissions Sources	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Area	0.38	33.14	0.18	0.18
SCAQMD Localized Screening Threshold (adjusted for 5 acres at 25 meters)	*197*	*1,711*	*4*	*2*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

Criteria Pollutant Health Impacts

On December 24, 2018, the California Supreme Court issued an opinion identifying the need to provide sufficient information connecting a project's air emissions to health impacts or explain why such information could not be ascertained (*Sierra Club v. County of Fresno* [Friant Ranch, L.P.] [2018] Cal.5th, Case No. S219783).

As previously discussed, Project emissions would be less than significant and would not exceed SCAQMD thresholds (refer to Table 8 and Table 9). Localized effects of on-site project emissions on nearby receptors were also found to be less than significant (refer to Table 12 and Table 13). The LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard. The LSTs were developed by the SCAQMD based on the ambient concentrations of that pollutant for each SRA and distance to the nearest sensitive receptor. Ambient air quality standards establish levels of air quality necessary, with an adequate margin of safety, to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Project-related emissions would not exceed the regional thresholds or the LSTs, and therefore would not exceed the ambient air quality standards or cause an increase in the frequency or severity of existing violations of those standards. Therefore, sensitive receptors would not be exposed to criteria pollutant levels exceeding ambient air quality standards.

Carbon Monoxide Hotspots

Intersection Hotspots. An analysis of CO "hot spots" is needed to determine whether the change in the level of service of an intersection due to the Project would result in exceedances of the CAAQS or NAAQS. Typically CO exceedances are caused by vehicular emissions, primarily when vehicles are idling at intersections. Vehicle emissions standards have become increasingly stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars. With turnover of older vehicles, cleaner fuels, and control technology on industrial facilities, CO concentrations have steadily declined.

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard. The SCAB was re-designated as attainment in 2007 and is no longer addressed in the SCAQMD's AQMP. The 2003 AQMP is the most recent version that addresses CO concentrations. As part of the SCAQMD *CO Hotspot Analysis*, the Wilshire Boulevard and Veteran Avenue intersection, one of the most congested intersections in Southern California with approximately 100,000 ADT, was modeled for CO concentrations. This effort identified a CO concentration high of 4.6 ppm, well below the 35-ppm Federal standard. The Project would not produce traffic volumes to generate a CO hot spot in the context of SCAQMD's *CO Hotspot Analysis*. Since CO hotspots were not experienced at the Wilshire Boulevard and Veteran Avenue intersection accommodating 100,000 ADT, it can be reasonably inferred that CO hotspots would not be experienced at any intersections in the Project vicinity resulting from the approximately 1,800 ADT attributable to the Project. Therefore, impacts would be less than significant.

Parking Structure Hotspots. CO concentrations are a function of vehicle idling time, meteorological conditions, and traffic flow. Parking structures may cause concern regarding CO hotspots, as they may be enclosed and have frequent vehicle operations in cold start mode. Open parking structures above ground would be naturally ventilated, preventing CO hotspots. Approximately 1,000 parking spaces would be constructed within the parking garage. If the proposed parking structure is designed to be enclosed, it would be required to comply with ventilation requirements of the International Mechanical Code (Section 404 [Enclosed Parking Garages]), which requires mechanical ventilation systems for enclosed parking garages to operate automatically by means of CO and NO_2 detectors. Section 404.2 requires a minimum air flow rate of 0.05 cubic feet per second per square foot (cfs/sf) and the system shall be capable of producing a ventilation airflow rate of 0.75 cfs/sf of floor area[4]. Impacts regarding parking structure CO hotspots would be less than significant.

Construction-Related Diesel Particulate Matter

Project construction would generate DPM emissions from the use of off-road diesel equipment required. The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e. potential exposure to TAC emission levels that exceed applicable standards). Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer.

The use of diesel-powered construction equipment would be temporary and episodic. The duration of exposure would be short and exhaust from construction equipment would dissipate rapidly. Current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 30, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. The closest sensitive receptors to the Project site are located approximately 30 feet from the Project limits, and further from the major Project construction areas.

California Office of Environmental Health Hazard Assessment has not identified short-term health effects from DPM. Construction is temporary and would be transient throughout the site (i.e. move from location

4 International Code Council, *International Mechanical Code*, *Chapter 4 Ventilation*, 2015. https://codes.iccsafe.org/public/document/IMC2015/chapter-4-ventilation, accessed August 15, 2018.

to location) and would not generate emissions in a fixed location for extended periods of time. Construction activities would be subject to and would comply with California regulations limiting the idling of heavy-duty construction equipment to no more than five minutes to further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions. For these reasons, DPM generated by Project construction activities, in and of itself, would not expose sensitive receptors to substantial amounts of air toxics and the Project would result in a less than significant impact.

LRDP Student Housing Amendment

The LRDP EIR found that implementation of the 2007 LRDP would not expose sensitive receptors to carcinogenic, non-carcinogenic, and localized CO pollutant concentrations in excess of regulatory standards. The LRDP EIR anticipated development throughout the UCI campus. As discussed above, construction emissions associated with the LRDP Student Housing Amendment would not result in construction emissions that would be substantially different than what was analyzed in the LRDP EIR.

The LRDP Amendment would increase the overall student housing capacity on the campus from 50 to 60 percent of student enrollment. However, no changes to student enrollment or the Academic and Support square footage capacity that was previously analyzed in the 2007 LRDP EIR would occur. The incremental future development of additional student housing would not expose sensitive receptors to substantial pollutant concentrations. Operations of student housing does not involve heavy-duty truck trips or other equipment that would generate pollutants. As the project would locate students on campus, it would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by essentially providing infill residential development on the campus and reducing the need to travel from off-site locations. Therefore, no new impact relative to localized impacts or a substantial increase in the severity of a previously identified significant impact evaluated in the Final EIR would occur. Additionally, no new information of substantial importance that was not known and could not have been known at the time the Final EIR was certified is available that would change the significance determination in the Final EIR.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold 5.4 Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Verano 8 Graduate Student Housing

The SCAQMD *CEQA Air Quality Handbook* identifies certain land uses as sources of odors. These land uses include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The Project would not include any of these land uses. During construction, some odors (not substantial pollutant concentrations) that may be detected are typical of construction vehicles (e.g. diesel exhaust from grading and construction equipment). These odors are a temporary short-term impact that is typical of construction projects and disperse rapidly. Therefore, the Project would not create objectionable odors.

LRDP Student Housing Amendment

The LRDP EIR concluded that the 2007 LRDP would not generate objectionable odors. The LRDP Student Housing Amendment would provide additional student housing on the campus and would not increase enrollment. Student housing would not result in a source of objectionable odors; no impact would occur.

Mitigation Measures: No mitigation is required.

Level of Significance: No impact.

6 REFERENCES

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4. California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective*, 2005.
5. California Air Resources Board, *Current Air Quality Standards*, 2016.
6. California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, 2000.
7. City of Irvine, *General Plan*, 2015.
8. International Code Council, *International Mechanical Code Chapter 4 Ventilation*, 2015.
9. Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Risk Assessment Guidelines*, 2015.
10. Southern California Association of Governments, *Regional Transportation Plan/Sustainable Communities Strategy*, 2016.
11. South Coast Air Quality Management District, *Air Quality Management Plan,* 2016.
12. South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 1993.
13. South Coast Air Quality Management District, *Localized Significance Threshold Methodology*, 2009.
14. Stantec, *UCI Verano 8 Student Housing Project and LRDP Housing Amendment Traffic Study*, June 2019.
15. State of California, Department of Finance, E-*5 Population and Housing Estimates for Cities, Counties and the State - January 1, 2011-2018*. Sacramento, California, May 2018.
16. University of California, Irvine, *Long Range Development Plan*, 2007.
17. University of California, Irvine, *Strategic Plan*, 2016.
18. United States Environmental Protection Agency, *National Ambient Air Quality Standards Table*, 2016.
19. United States Environmental Protection Agency, *Nonattainment Areas for Criteria Pollutants*, 2018.
20. United States Environmental Protection Agency, *Policy Assessment for the Review of the Lead National Ambient Air Quality Standards*, 2013.

Appendix A

Air Quality Modeling Data

UCI LRDP Housing Amendment

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	1,885.00	Dwelling Unit	49.61	1,885,000.00	5391

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	549	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - per SCE 2017 Sustainability Report

Land Use - apartments mid rise = student housing, 2.5 beds per DU

Construction Phase - operational only run

Off-road Equipment -

Demolition -

Grading - anticipated earthwork (balanced)

Vehicle Trips - trip generation per housing amendment traffic study

Woodstoves - no hearths

Area Coating -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation - per CBC 2019 and UC Policy

Water Mitigation -

Waste Mitigation -

Operational Off-Road Equipment -

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	50.00	0.00
tblConstructionPhase	PhaseEndDate	6/9/2020	3/31/2020
tblFireplaces	NumberGas	1,602.25	0.00
tblFireplaces	NumberNoFireplace	188.50	1,885.00
tblFireplaces	NumberWood	94.25	0.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	549
tblVehicleTrips	HO_TTP	40.60	40.00
tblVehicleTrips	HS_TTP	19.20	19.00
tblVehicleTrips	HW_TTP	40.20	41.00
tblVehicleTrips	ST_TR	6.39	2.63
tblVehicleTrips	SU_TR	5.86	2.63
tblVehicleTrips	WD_TR	6.65	2.63
tblWoodstoves	NumberCatalytic	94.25	0.00
tblWoodstoves	NumberNoncatalytic	94.25	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	1.6598	0.0000	0.0000	1.5429	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.6598**	**0.0000**	**0.0000**	**1.5429**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

<u>Mitigated Construction</u>

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	1.6598	0.0000	0.0000	1.5429	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.6598**	**0.0000**	**0.0000**	**1.5429**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

<u>Unmitigated Operational</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	45.2567	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602	0.0000	280.0212	280.0212	0.2702	0.0000	286.7750
Energy	0.6364	5.4387	2.3143	0.0347		0.4397	0.4397		0.4397	0.4397		6,943.0337	6,943.0337	0.1331	0.1273	6,984.2927
Mobile	7.3481	29.5367	100.9223	0.3955	36.1185	0.2808	36.3993	9.6585	0.2612	9.9197		40,175.1490	40,175.1490	1.5900		40,214.8983
Total	**53.2413**	**36.7709**	**258.9189**	**0.4385**	**36.1185**	**1.5807**	**37.6992**	**9.6585**	**1.5611**	**11.2196**	**0.0000**	**47,398.2039**	**47,398.2039**	**1.9932**	**0.1273**	**47,485.9660**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	45.2567	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602	0.0000	280.0212	280.0212	0.2702	0.0000	286.7750
Energy	0.5377	4.5947	1.9552	0.0293		0.3715	0.3715		0.3715	0.3715		5,865.5379	5,865.5379	0.1124	0.1075	5,900.3939
Mobile	5.5940	19.4110	51.7674	0.1770	15.3610	0.1348	15.4958	4.1077	0.1253	4.2330		17,995.3858	17,995.3858	0.7967		18,015.3034
Total	**51.3884**	**25.8011**	**209.4049**	**0.2145**	**15.3610**	**1.3665**	**16.7275**	**4.1077**	**1.3570**	**5.4647**	**0.0000**	**24,140.9450**	**24,140.9450**	**1.1793**	**0.1075**	**24,202.4723**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**3.48**	**29.83**	**19.12**	**51.08**	**57.47**	**13.55**	**55.63**	**57.47**	**13.08**	**51.29**	**0.00**	**49.07**	**49.07**	**40.84**	**15.52**	**49.03**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

1	Demolition	Demolition	4/1/2020	3/31/2020	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2020

<u>Unmitigated Construction On-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.5940	19.4110	51.7674	0.1770	15.3610	0.1348	15.4958	4.1077	0.1253	4.2330		17,995.3858	17,995.3858	0.7967		18,015.3034
Unmitigated	7.3481	29.5367	100.9223	0.3955	36.1185	0.2808	36.3993	9.6585	0.2612	9.9197		40,175.1490	40,175.1490	1.5900		40,214.8983

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	4,957.55	4,957.55	4957.55	17,026,544	7,241,312
Total	4,957.55	4,957.55	4,957.55	17,026,544	7,241,312

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	41.00	19.00	40.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Install Energy Efficient Appliances

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
NaturalGas Mitigated	0.5377	4.5947	1.9552	0.0293		0.3715	0.3715		0.3715	0.3715		5,865.5379	5,865.5379	0.1124	0.1075	5,900.3939
NaturalGas Unmitigated	0.6364	5.4387	2.3143	0.0347		0.4397	0.4397		0.4397	0.4397		6,943.0337	6,943.0337	0.1331	0.1273	6,984.2927

5.2 Energy by Land Use - NaturalGas

Unmitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	59015.8	0.6364	5.4387	2.3143	0.0347		0.4397	0.4397		0.4397	0.4397		6,943.0337	6,943.0337	0.1331	0.1273	6,984.2927
Total		**0.6364**	**5.4387**	**2.3143**	**0.0347**		**0.4397**	**0.4397**		**0.4397**	**0.4397**		**6,943.0337**	**6,943.0337**	**0.1331**	**0.1273**	**6,984.2927**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	49.8571	0.5377	4.5947	1.9552	0.0293		0.3715	0.3715		0.3715	0.3715		5,865.5379	5,865.5379	0.1124	0.1075	5,900.3939
Total		**0.5377**	**4.5947**	**1.9552**	**0.0293**		**0.3715**	**0.3715**		**0.3715**	**0.3715**		**5,865.5379**	**5,865.5379**	**0.1124**	**0.1075**	**5,900.3939**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	45.2567	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602	0.0000	280.0212	280.0212	0.2702	0.0000	286.7750
Unmitigated	45.2567	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602	0.0000	280.0212	280.0212	0.2702	0.0000	286.7750

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

Architectural Coating	3.2315					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	37.3230					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.7023	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602		280.0212	280.0212	0.2702		286.7750
Total	**45.2567**	**1.7955**	**155.6823**	**8.2100e-003**		**0.8602**	**0.8602**		**0.8602**	**0.8602**	**0.0000**	**280.0212**	**280.0212**	**0.2702**	**0.0000**	**286.7750**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.2315					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	37.3230					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.7023	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602		280.0212	280.0212	0.2702		286.7750
Total	**45.2567**	**1.7955**	**155.6823**	**8.2100e-003**		**0.8602**	**0.8602**		**0.8602**	**0.8602**	**0.0000**	**280.0212**	**280.0212**	**0.2702**	**0.0000**	**286.7750**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

UCI LRDP Housing Amendment
Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	1,885.00	Dwelling Unit	49.61	1,885,000.00	5391

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	549	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - per SCE 2017 Sustainability Report

Land Use - apartments mid rise = student housing, 2.5 beds per DU

Construction Phase - operational only run

Off-road Equipment -

Demolition -

Grading - anticipated earthwork (balanced)

Vehicle Trips - trip generation per housing amendment traffic study

Woodstoves - no hearths

Area Coating -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation - per CBC 2019 and UC Policy

Water Mitigation -

Waste Mitigation -

Operational Off-Road Equipment -

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	50.00	0.00
tblConstructionPhase	PhaseEndDate	6/9/2020	3/31/2020
tblFireplaces	NumberGas	1,602.25	0.00
tblFireplaces	NumberNoFireplace	188.50	1,885.00
tblFireplaces	NumberWood	94.25	0.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	549
tblVehicleTrips	HO_TTP	40.60	40.00
tblVehicleTrips	HS_TTP	19.20	19.00
tblVehicleTrips	HW_TTP	40.20	41.00
tblVehicleTrips	ST_TR	6.39	2.63
tblVehicleTrips	SU_TR	5.86	2.63
tblVehicleTrips	WD_TR	6.65	2.63
tblWoodstoves	NumberCatalytic	94.25	0.00
tblWoodstoves	NumberNoncatalytic	94.25	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	1.6598	0.0000	0.0000	1.5429	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.6598**	**0.0000**	**0.0000**	**1.5429**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	1.6598	0.0000	0.0000	1.5429	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.6598**	**0.0000**	**0.0000**	**1.5429**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	45.2567	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602	0.0000	280.0212	280.0212	0.2702	0.0000	286.7750
Energy	0.6364	5.4387	2.3143	0.0347		0.4397	0.4397		0.4397	0.4397		6,943.0337	6,943.0337	0.1331	0.1273	6,984.2927
Mobile	7.2213	30.3860	96.2206	0.3778	36.1185	0.2820	36.4004	9.6585	0.2623	9.9208		38,404.2031	38,404.2031	1.5835		38,443.7893
Total	**53.1144**	**37.6202**	**254.2172**	**0.4208**	**36.1185**	**1.5819**	**37.7003**	**9.6585**	**1.5622**	**11.2207**	**0.0000**	**45,627.2580**	**45,627.2580**	**1.9867**	**0.1273**	**45,714.8569**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	45.2567	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602	0.0000	280.0212	280.0212	0.2702	0.0000	286.7750
Energy	0.5377	4.5947	1.9552	0.0293		0.3715	0.3715		0.3715	0.3715		5,865.5379	5,865.5379	0.1124	0.1075	5,900.3939
Mobile	5.5024	19.6708	51.3421	0.1689	15.3610	0.1360	15.4970	4.1077	0.1264	4.2341		17,176.5088	17,176.5088	0.8088		17,196.7283
Total	**51.2968**	**26.0610**	**208.9796**	**0.2064**	**15.3610**	**1.3676**	**16.7286**	**4.1077**	**1.3580**	**5.4658**	**0.0000**	**23,322.0679**	**23,322.0679**	**1.1914**	**0.1075**	**23,383.8972**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**3.42**	**30.73**	**17.79**	**50.95**	**57.47**	**13.54**	**55.63**	**57.47**	**13.07**	**51.29**	**0.00**	**48.89**	**48.89**	**40.03**	**15.52**	**48.85**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

1	Demolition	Demolition	4/1/2020	3/31/2020	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2020

<u>Unmitigated Construction On-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	5.5024	19.6708	51.3421	0.1689	15.3610	0.1360	15.4970	4.1077	0.1264	4.2341		17,176.5088	17,176.5088	0.8088		17,196.7283
Unmitigated	7.2213	30.3860	96.2206	0.3778	36.1185	0.2820	36.4004	9.6585	0.2623	9.9208		38,404.2031	38,404.2031	1.5835		38,443.7893

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	4,957.55	4,957.55	4957.55	17,026,544	7,241,312
Total	4,957.55	4,957.55	4,957.55	17,026,544	7,241,312

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	41.00	19.00	40.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Install Energy Efficient Appliances

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
NaturalGas Mitigated	0.5377	4.5947	1.9552	0.0293		0.3715	0.3715		0.3715	0.3715		5,865.5379	5,865.5379	0.1124	0.1075	5,900.3939
NaturalGas Unmitigated	0.6364	5.4387	2.3143	0.0347		0.4397	0.4397		0.4397	0.4397		6,943.0337	6,943.0337	0.1331	0.1273	6,984.2927

5.2 Energy by Land Use - NaturalGas

Unmitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	59015.8	0.6364	5.4387	2.3143	0.0347		0.4397	0.4397		0.4397	0.4397		6,943.0337	6,943.0337	0.1331	0.1273	6,984.2927
Total		**0.6364**	**5.4387**	**2.3143**	**0.0347**		**0.4397**	**0.4397**		**0.4397**	**0.4397**		**6,943.0337**	**6,943.0337**	**0.1331**	**0.1273**	**6,984.2927**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	49.8571	0.5377	4.5947	1.9552	0.0293		0.3715	0.3715		0.3715	0.3715		5,865.5379	5,865.5379	0.1124	0.1075	5,900.3939
Total		**0.5377**	**4.5947**	**1.9552**	**0.0293**		**0.3715**	**0.3715**		**0.3715**	**0.3715**		**5,865.5379**	**5,865.5379**	**0.1124**	**0.1075**	**5,900.3939**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	45.2567	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602	0.0000	280.0212	280.0212	0.2702	0.0000	286.7750
Unmitigated	45.2567	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602	0.0000	280.0212	280.0212	0.2702	0.0000	286.7750

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

Architectural Coating	3.2315					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	37.3230					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.7023	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602		280.0212	280.0212	0.2702		286.7750
Total	**45.2567**	**1.7955**	**155.6823**	**8.2100e-003**		**0.8602**	**0.8602**		**0.8602**	**0.8602**	**0.0000**	**280.0212**	**280.0212**	**0.2702**	**0.0000**	**286.7750**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.2315					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	37.3230					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.7023	1.7955	155.6823	8.2100e-003		0.8602	0.8602		0.8602	0.8602		280.0212	280.0212	0.2702		286.7750
Total	**45.2567**	**1.7955**	**155.6823**	**8.2100e-003**		**0.8602**	**0.8602**		**0.8602**	**0.8602**	**0.0000**	**280.0212**	**280.0212**	**0.2702**	**0.0000**	**286.7750**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B

Greenhouse Gas Assessment

Greenhouse Gas Emissions Assessment
for the proposed
Verano 8 & LRDP Student Housing Amendment
at the University of California, Irvine

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June 2019

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LIST OF ABBREVIATED TERMS

AB	Assembly Bill
CARB	California Air Resource Board
CCR	California Code of Regulations
CalEEMod	California Emissions Estimator Model
CEQA	California Environmental Quality Act
CALGreen	California Green Building Standards
CPUC	California Public Utilities Commission
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CFC	Chlorofluorocarbon
CPP	Clean Power Plan
CAP	Climate Action Plan
cy	cubic yard
COHS	College of Health Sciences
EPA	Environmental Protection Agency
FCAA	Federal Clean Air Act
FR	Federal Register
GHG	greenhouse gas
gsf	gross square foot
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
LEED	Leadership in Energy and Environmental Design
LCFS	Low Carbon Fuel Standard
CH_4	Methane
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
$MTCO_2e$	million tons of carbon dioxide equivalent
NHTSA	National Highway Traffic Safety Administration
NF_3	nitrogen trifluoride
N_2O	nitrous oxide
PFC	Perfluorocarbon
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Government
SF_6	sulfur hexafluoride
SPP	Sustainable Practice Policy
TAC	toxic air contaminants
UC	University of California
UCI	University of California, Irvine

1 INTRODUCTION

This report documents the results of a Greenhouse Gas (GHG) Emissions Assessment completed for the University of California Irvine (UCI) Verano 8 Graduate Student Housing Project. The purpose of this GHG Emissions Assessment is to evaluate the potential construction and operational emissions associated with the proposed Project and determine the Project's level of impact on the environment.

1.1 PROJECT LOCATION

The Project is in Orange County, in the City of Irvine within the UCI campus; see Exhibit 1: Regional Vicinity. The 7.8-acre Project site is located on the UCI East Campus adjacent to the southeast corner of the Adobe Circle South and Verano Road South intersection; see Exhibit 2: Site Vicinity. The site is surrounded by existing campus development with Puerta del Sol student housing to the north, Verano Place student housing to the west and south, and the Early Childhood Education Center and Infant/Toddler Centers I and II to the east. Regional access to the Project site is provided via Interstate 405 and State Route 73 located to the north and west, respectively. Local access to the Project site is provided via Culver Drive and Campus Drive.

1.2 PROJECT DESCRIPTION

The Project proposes to construct up to 1,200 new graduate student beds on an approximately 7.8-acre site in the UCI East Campus; see Exhibit 3: Site Plan. The existing site is predominantly vacant and was previously graded and developed as a prior phase of the Verano Place Graduate Apartments complex, which has since been demolished. The Project would demolish the existing 6,000 gross square foot (gsf) maintenance and operations facility and construct an approximately 500,000 gsf graduate student housing facility, approximately 28,000 gsf community center, approximately 1,000-space parking structure, and an approximately 10,500 gsf replacement maintenance and operations facility. The overall student population would not directly increase. The Project site is inside the UCI campus and is zoned for student housing.

In addition to the proposed Verano 8 Project, UCI is proposing to amend its existing 2007 Long Range Development Plan (LRDP) to increase on-campus student housing capacity from 50 percent to 60 percent of student enrollment. Changes in land use designations are proposed at a six-acre parcel (TAZ 6) in the Academic Core (change from Academic and Support to Student Housing; refer to Exhibit 4: LRDP Student Housing) where the existing Campus Village housing is located. Ultimately, the Campus Village would be redeveloped at a higher density on the newly designated Student Housing portion of the site. An undeveloped 12-acre parcel (TAZ 50) in the West Campus would be redesignated from Student Housing to Academic Support to accommodate the LRDP program changes. Higher building densities across the campus would accommodate the LRDP Amendment's increased bed capacity and the 12-acre parcel in the West Campus is no longer needed for student housing.

Project Construction and Phasing

Project construction is anticipated to occur beginning in April 2020 and last approximately 26 months, ending in July 2022. Grading for the proposed improvements would require cut and fill to create building pads. The Project is anticipated to require a net cut of approximately 14,000 cubic yards (cy) of soil. Final grading plans would be approved by the UCI Building Official before Grading Permit issuance. All infrastructure (i.e. storm drain, water, wastewater, dry utilities, and street improvements) would be installed during grading. Construction for the Project would occur in one phase. For purposes of this environmental analysis, opening year is conservatively assumed to be 2022.

Exhibit 1: Regional Vicinity

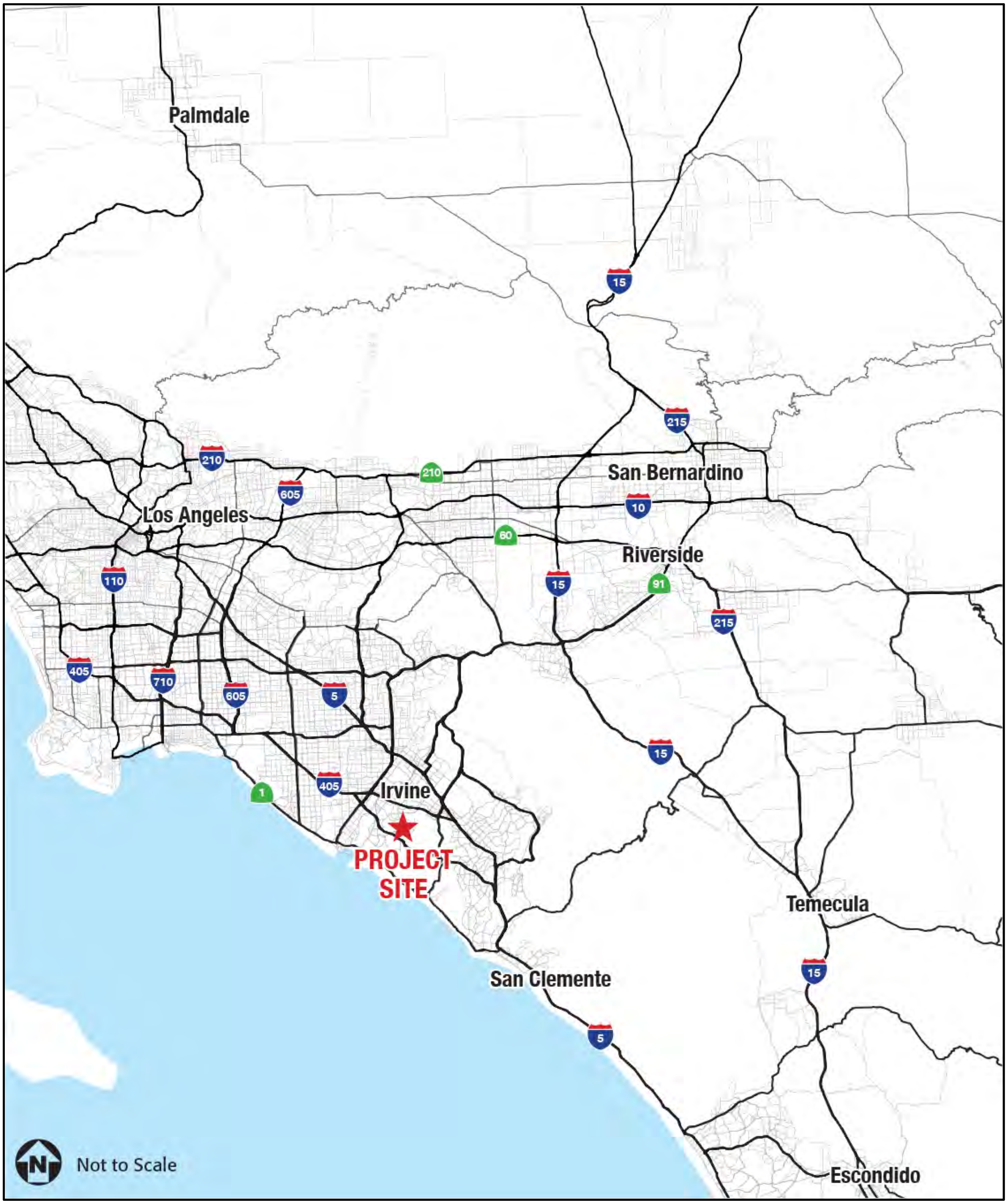


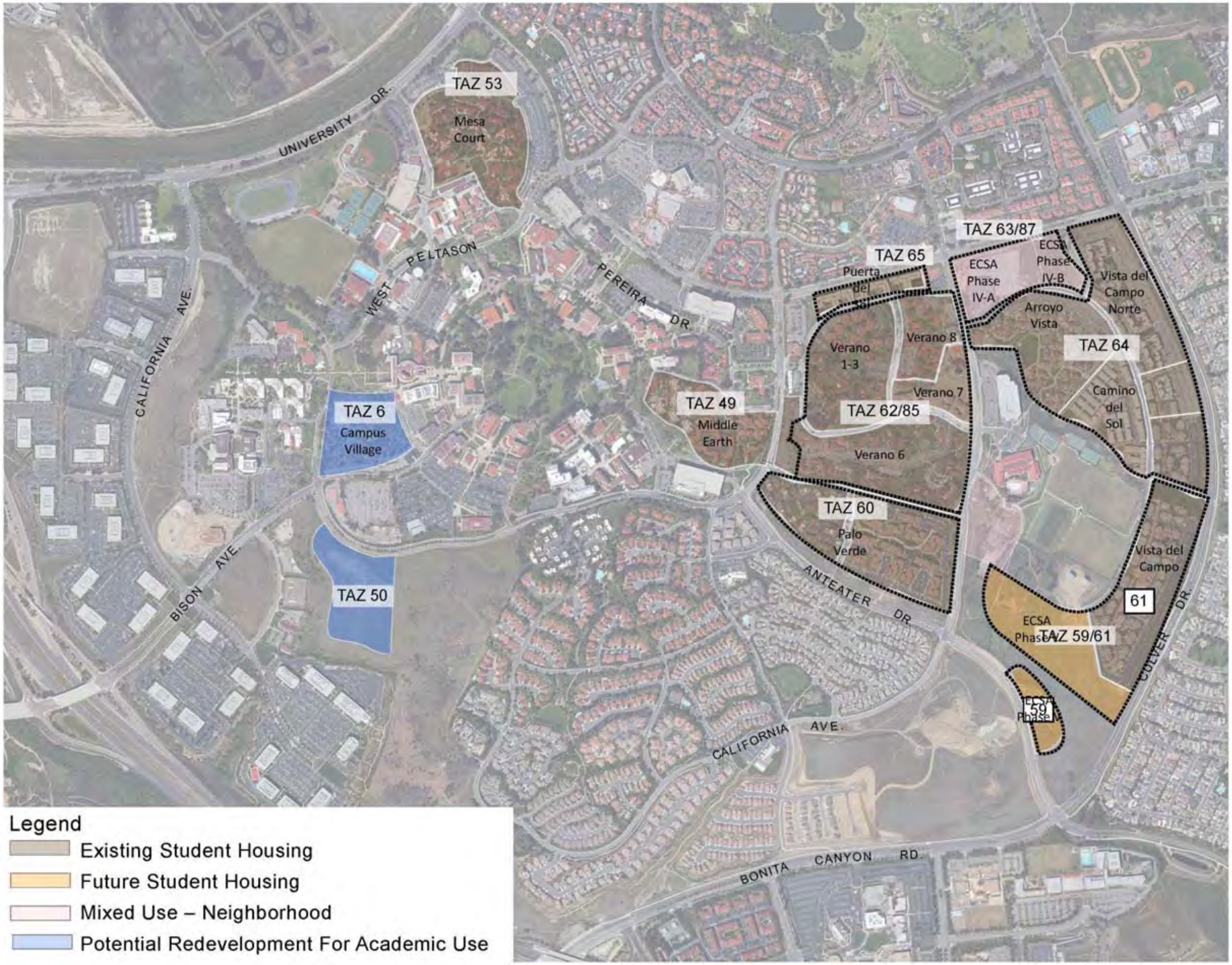
Exhibit 2: Site Vicinity

Source: Google Maps, 2019.

Exhibit 3: Site Plan

Source: University of California Irvine, 2019.

Exhibit 4: LRDP Student Housing



2 ENVIRONMENTAL SETTING

2.1 GREENHOUSE GASES AND CLIMATE CHANGE

Certain gases in the earth's atmosphere classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Because the earth has a much lower temperature than the sun, it emits lower-frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

The primary GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Fluorinated gases also make up a small fraction of the GHGs that contribute to climate change. Examples of fluorinated gases include chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3); however, it is noted that these gases are not associated with typical land use development. Human-caused emissions of GHGs exceeding natural ambient concentrations are believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the Earth's climate, known as global climate change or global warming.

GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (TACs), which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of a GHG molecule is dependent on multiple variables and cannot be pinpointed, more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms of carbon sequestration. Of the total annual human-caused CO_2 emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remains stored in the atmosphere[1]. Table 1: Description of Greenhouse Gases, describes the primary GHGs attributed to global climate change, including their physical properties.

1 Intergovernmental Panel on Climate Change, *Carbon and Other Biogeochemical Cycles. In: Climate Change 2013: The Physical Science Basis*, *Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2013. http://www.climatechange2013.org/ images/report/WG1AR5_ALL_FINAL.pdf.

Table 1: Description of Greenhouse Gases	
Greenhouse Gas	**Description**
Carbon Dioxide (CO_2)	CO_2 is a colorless, odorless gas that is emitted naturally and through human activities. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, and industrial facilities. The atmospheric lifetime of CO_2 is variable because it is readily exchanged in the atmosphere. CO_2 is the most widely emitted GHG and is the reference gas (Global Warming Potential of 1) for determining Global Warming Potentials for other GHGs.
Nitrous Oxide (N_2O)	N_2O is largely attributable to agricultural practices and soil management. Primary human-related sources of N_2O include agricultural soil management, sewage treatment, combustion of fossil fuels, and adipic and nitric acid production. N_2O is produced from biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years. The Global Warming Potential of N_2O is 298.
Methane (CH_4)	CH_4, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. Methane is the major component of natural gas, approximately 87 percent by volume. Human-related sources include fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. Natural sources of CH_4 include wetlands, gas hydrates, termites, oceans, freshwater bodies, non-wetland soils, and wildfires. The atmospheric lifetime of CH_4 is approximately 12 years and the Global Warming Potential is 25.
Hydrofluorocarbons (HFCs)	HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is increasing, as the continued phase out of CFCs and HCFCs gains momentum. The 100-year Global Warming Potential of HFCs range from 124 for HFC-152 to 14,800 for HFC-23.
Perfluorocarbons (PFCs)	PFCs have stable molecular structures and only break down by ultraviolet rays approximately 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Global Warming Potentials range from 6,500 to 9,200.
Chlorofluorocarbons (CFCs)	CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987. Global Warming Potentials for CFCs range from 3,800 to 14,400.
Sulfur Hexafluoride (SF_6)	SF_6 is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas. The Global Warming Potential of SF_6 is 23,900.
Hydrochlorofluorocarbons (HCFCs)	HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, HCFCs are subject to a consumption cap and gradual phase out. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The 100-year Global Warming Potentials of HCFCs range from 90 for HCFC-123 to 1,800 for HCFC-142b.
Nitrogen Trifluoride (NF_3)	NF_3 was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. This gas is used in electronics manufacture for semiconductors and liquid crystal displays. It has a high global warming potential of 17,200.

Source: Compiled from U.S. EPA, *Overview of Greenhouse Gases*, April 11, 2018 (https://www.epa.gov/ghgemissions/overview-greenhouse-gases); U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016*, 2018; Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis*, 2007; National Research Council, *Advancing the Science of Climate Change*, 2010; U.S. EPA, *Methane and Nitrous Oxide Emission from Natural Sources*, April 2010.

3 REGULATORY SETTING

3.1 FEDERAL

To date, national standards have not been established for nationwide GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level. Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (December 2007), among other key measures, requires the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020 and direct the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

U.S. Environmental Protection Agency Endangerment Finding

The U.S. Environmental Protection Agency's (EPA) authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Federal Clean Air Act (FCAA) and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, the EPA finalized an endangerment finding in December 2009. Based on scientific evidence, it found that six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing FCAA and the EPA's assessment of the scientific evidence that form the basis for the EPA's regulatory actions.

Federal Vehicle Standards

In response to the U.S. Supreme Court ruling discussed above, Executive Order 13432 was issued in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, an Executive Memorandum was issued directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking. On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks. It should be noted that the EPA is currently proposing to freeze the vehicle fuel efficiency standards at their planned 2020 level (37 miles per gallon), canceling any future strengthening (currently 54.5 miles per gallon by 2026).

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6 to 23 percent over the 2010 baselines.

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion metric tons and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program.

In 2018, the President and the EPA have stated their intent to halt various federal regulatory activities to reduce GHG emission, including the phase two program. California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives. The timing and consequences of these types of federal decisions and potential responses from California and other states are speculative at this time.

Clean Power Plan and New Source Performance Standards for Electric Generating Units

On October 23, 2015, the EPA published a final rule (effective December 22, 2015) establishing the carbon pollution emission guidelines for existing stationary sources: electric utility generating units (80 Federal Register [FR] 64510–64660), also known as the Clean Power Plan (CPP). These guidelines prescribe how states must develop plans to reduce GHG emissions from existing fossil-fuel-fired electric generating units. The guidelines establish CO_2 emission performance rates representing the best system of emission reduction for two subcategories of existing fossil-fuel-fired electric generating units: one fossil-fuel-fired electric utility steam-generating unit and two stationary combustion turbines. Concurrently, the EPA published a final rule (effective October 23, 2015) establishing standards of performance for GHG emissions from new, modified, and reconstructed stationary sources: electric utility generating units (80 FR 64661–65120). The rule prescribes CO_2 emission standards for newly constructed, modified, and reconstructed affected fossil-fuel-fired electric utility generating units. The U.S. Supreme Court stayed implementation of the CPP pending resolution of several lawsuits. Additionally, in March 2017, the federal government directed the EPA Administrator to review the CPP to determine whether it is consistent with current executive policies concerning GHG emissions, climate change, and energy.

Presidential Executive Order 13783

Presidential Executive Order 13783, *Promoting Energy Independence and Economic Growth* issued on March 28, 2017, orders all federal agencies to apply cost-benefit analyses to regulations of GHG emissions and evaluations of the social cost of CO_2, N_2O, and CH_4.

3.2 STATE OF CALIFORNIA

California Air Resources Board

The California Air Resources Board (CARB) is responsible for the coordination and oversight of state and local air pollution control programs in California. Various statewide and local initiatives to reduce California's contribution to GHG emissions have raised awareness about climate change and its potential for severe long-term adverse environmental, social, and economic effects. California is a significant emitter of CO_2 equivalents (CO_2e) in the world and produced 459 million gross metric tons of CO_2e in 2013. In California, the transportation sector is the largest emitter of GHGs, followed by industrial operations such as manufacturing and oil and gas extraction.

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation, such as the landmark Assembly Bill (AB) 32, *California Global Warming Solutions Act of 2006*, was specifically enacted to address GHG emissions. Other legislation, such as Title 24 building efficiency standards and Title 20 appliance energy standards, were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

Assembly Bill 32 (California Global Warming Solutions Act of 2006)

AB 32 instructs the CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. AB 32 also directed CARB to set a GHG emissions limit based on 1990 levels, to be achieved by 2020. It set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

CARB Scoping Plan

CARB adopted the Scoping Plan to achieve the goals of AB 32. The Scoping Plan establishes a framework for the measures that would be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emissions level would require a reduction of GHG emissions of approximately 29 percent below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as "business-as-usual")[2]. The Scoping Plan evaluates opportunities for sector-specific reductions,

2 CARB defines business-as-usual in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002–2004 emissions intensities. Under CARB's definition of business-as-usual, new growth is assumed to have the same carbon intensities as was typical from 2002 through 2004.

integrates early actions and additional GHG reduction measures by both CARB and the state's Climate Action Team, identifies additional measures to be pursued as regulations, and outlines the adopted role of a cap-and-trade program[3]. Additional development of these measures and adoption of appropriate regulations occurred through the end of 2013. Key elements of the Scoping Plan include:

- Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards.
- Achieving a statewide renewables energy mix of 33 percent by 2020.
- Developing a California cap-and-trade program that links with other programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions (adopted in 2011).
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets (several sustainable community strategies have been adopted).
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, heavy-duty truck measures, the Low Carbon Fuel Standard (amendments to the Pavley Standard adopted 2009; Advanced Clean Car standard adopted 2012), goods movement measures, and the Low Carbon Fuel Standard (adopted 2009).
- Creating targeted fees, including a public goods charge on water use, fees on gasses with high global warming potential, and a fee to fund the administrative costs of California's long-term commitment to AB 32 implementation.

In 2012, CARB released revised estimates of the expected 2020 emissions reductions. The revised analysis relied on emissions projections updated considering current economic forecasts that accounted for the economic downturn since 2008, reduction measures already approved and put in place relating to future fuel and energy demand, and other factors. This update reduced the projected 2020 emissions from 596 million metric tons of CO_2e ($MMTCO_2e$) to 545 $MMTCO_2e$. The reduction in forecasted 2020 emissions means that the revised business-as-usual reduction necessary to achieve AB 32's goal of reaching 1990 levels by 2020 is now 21.7 percent, down from 29 percent. CARB also provided a lower 2020 inventory forecast that incorporated state-led GHG emissions reduction measures already in place. When this lower forecast is considered, the necessary reduction from business-as-usual needed to achieve the goals of AB 32 is approximately 16 percent.

CARB adopted the first major update to the Scoping Plan on May 22, 2014. The updated Scoping Plan summarizes the most recent science related to climate change, including anticipated impacts to California and the levels of GHG emissions reductions necessary to likely avoid risking irreparable damage. It identifies the actions California has already taken to reduce GHG emissions and focuses on areas where further reductions could be achieved to help meet the 2020 target established by AB 32.

[3] The Climate Action Team, led by the secretary of the California Environmental Protection Agency, is a group of State agency secretaries and heads of agencies, boards, and departments. Team members work to coordinate statewide efforts to implement global warming emissions reduction programs and the State's Climate Adaptation Strategy.

Senate Bill 32 (California Global Warming Solutions Act of 2006: Emissions Limit)

Signed into law in September 2016, SB 32 codifies the 2030 GHG reduction target in Executive Order B-30-15 (40 percent below 1990 levels by 2030). The bill authorizes CARB to adopt an interim GHG emissions level target to be achieved by 2030. CARB also must adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective GHG reductions.

With SB 32, the Legislature passed companion legislation, AB 197, which provides additional direction for developing the Scoping Plan. On December 14, 2017 CARB adopted a second update to the Scoping Plan[4]. The 2017 Scoping Plan details how the state will reduce GHG emissions to meet the 2030 target set by Executive Order B-30-15 and codified by SB 32. Other objectives listed in the 2017 Scoping plan are to provide direct GHG emissions reductions; support climate investment in disadvantaged communities; and, support the Clean Power Plan and other Federal actions.

Senate Bill 375 (The Sustainable Communities and Climate Protection Act of 2008)

Signed into law on September 30, 2008, SB 375 provides a process to coordinate land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction goals established by AB 32. SB 375 requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, aligns planning for transportation and housing, and creates specified incentives for the implementation of the strategies.

Assembly Bill 1493 (Pavley Regulations and Fuel Efficiency Standards)

AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011. The regulations establish one set of emission standards for model years 2009–2016 and a second set of emissions standards for model years 2017 to 2025. By 2025, when all rules will be fully implemented, new automobiles will emit 34 percent fewer CO_2e emissions and 75 percent fewer smog-forming emissions.

Senate Bill 1368 (Emission Performance Standards)

SB 1368 is the companion bill of AB 32, which directs the California Public Utilities Commission (CPUC) to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 limits carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. The new law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the state. The CPUC adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, for 1,100 pounds of CO_2 per megawatt-hour.

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4 California Air Resources Board, *California's 2017 Climate Change Scoping Plan,* https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed May 9, 2018.

Senate Bill 1078 and X1-2 (Renewable Electricity Standards)

SB 1078 (2002) required California to generate 20 percent of its electricity from renewable energy by 2017. In 2005, SB 107 accelerated the due date of the 20 percent mandate to 2010 instead of 2017. These mandates apply directly to investor-owned utilities. On November 17, 2008, Executive Order S-14-08 established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Executive Order S-21-09 also directed CARB to adopt a regulation by July 31, 2010, requiring the state's load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23. SB X1-2 (2011) codified the 33 percent by 2020 goal.

Senate Bill 350 (Clean Energy and Pollution Reduction Act of 2015)

Signed into law on October 7, 2015, SB 350 implements the goals of Executive Order B-30-15. The objectives of SB 350 are to increase the procurement of electricity from renewable sources from 33 percent to 50 percent (with interim targets of 40 percent by 2024, and 45 percent by 2027) and to double the energy efficiency savings in electricity and natural gas end uses of retail customers through energy efficiency and conservation. SB 350 also reorganizes the Independent System Operator to develop more regional electricity transmission markets and improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States.

Assembly Bill 398 (Market-Based Compliance Mechanisms)

Signed on July 25, 2017, AB 398 extended the duration of the Cap-and-Trade program from 2020 to 2030. AB 398 required CARB to update the Scoping Plan and for all GHG rules and regulations adopted by the State. It also designated CARB as the statewide regulatory body responsible for ensuring that California meets its statewide carbon pollution reduction targets, while retaining local air districts' responsibility and authority to curb toxic air contaminants and criteria pollutants from local sources that severely impact public health. AB 398 also decreased free carbon allowances over 40 percent by 2030 and prioritized Cap-and-Trade spending to various programs including reducing diesel emissions in impacted communities.

Senate Bill 150 (Regional Transportation Plans)

Signed on October 10, 2017, SB 150 aligns local and regional GHG reduction targets with State targets (i.e. 40 percent below their 1990 levels by 2030). SB 150 creates a process to include communities in discussions on how to monitor their regions' progress on meeting these goals. The bill also requires the CARB to regularly report on that progress, as well as on the successes and the challenges regions experience associated with achieving their targets. SB 150 provides for accounting of climate change efforts and GHG reductions and identify effective reduction strategies.

Senate Bill 100 (California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases)

Signed into Law in September 2018, SB 100 increased California's renewable electricity portfolio from 50 to 60 percent by 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045.

Executive Orders Related to GHG Emissions

California's Executive Branch has taken several actions to reduce GHGs using executive orders. Although not regulatory, they set the state's tone and guide the actions of state agencies.

Executive Order S-3-05

Executive Order S-3-05 was issued on June 1, 2005, which established the following GHG emissions reduction targets:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

Executive Order S-01-07

Issued on January 18, 2007, Executive Order S-01-07 mandates that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. The order established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, CARB, the University of California (UC), and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. CARB adopted the LCFS on April 23, 2009.

Executive Order S-13-08

Issued on November 14, 2008, Executive Order S-13-08 facilitated the California Natural Resources Agency development of the 2009 California Climate Adaptation Strategy. Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order S-14-08

Issued on November 17, 2008, Executive Order S-14-08 expands the state's Renewable Energy Standard to 33 percent renewable power by 2020. Additionally, Executive Order S-21-09 (signed on September 15, 2009) directs CARB to adopt regulations requiring 33 percent of electricity sold in the state come from renewable energy by 2020. CARB adopted the Renewable Electricity Standard on September 23, 2010, which requires 33 percent renewable energy by 2020 for most publicly owned electricity retailers.

Executive Order S-21-09

Issued on July 17, 2009, Executive Order S-21-09 directs CARB to adopt regulations to increase California's RPS to 33 percent by 2020. This builds upon SB 1078 (2002), which established the California RPS program, requiring 20 percent renewable energy by 2017, and SB 107 (2006), which advanced the 20 percent deadline to 2010, a goal which was expanded to 33 percent by 2020 in the 2005 Energy Action Plan II.

Executive Order B-30-15

Issued on April 29, 2015, Executive Order B-30-15 established a California GHG reduction target of 40 percent below 1990 levels by 2030 and directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of $MMTCO_2e$. The 2030 target acts as an interim goal on the way to achieving reductions of 80 percent below 1990 levels by 2050, a goal set by Executive Order S-3-05. The executive order also requires the state's climate adaptation plan to be updated every three years and for the state to continue its climate change research program, among other provisions. With the enactment of SB 32 in 2016, the Legislature codified the goal of reducing GHG emissions by 2030 to 40 percent below 1990 levels.

Executive Order B-55-18

Issued on September 10, 2018, Executive Order B-55-18 establishes a goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing GHG emissions. The executive order requires CARB to work with relevant state agencies to develop a framework for implementing this goal. It also requires CARB to update the Scoping Plan to identify and recommend measures to achieve carbon neutrality. The executive order also requires state agencies to develop sequestration targets in the Natural and Working Lands Climate Change Implementation Plan.

California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat, even with rapid population growth.

Title 20 Appliance Efficiency Regulations

The appliance efficiency regulations (California Code of Regulations [CCR] Title 20, Sections 1601-1608) include standards for new appliances. Twenty-three categories of appliances are included in the scope of these regulations. These standards include minimum levels of operating efficiency, and other cost-effective measures, to promote the use of energy- and water-efficient appliances.

Title 24 Building Energy Efficiency Standards

California's Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR Title 24, Part 6), was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2016 Building Energy Efficiency Standards approved on January 19, 2016 went into effect on January 1, 2017. The 2019 Building Energy Efficiency Standards were adopted on May 9, 2018 and take effect on January 1, 2020. Under the 2019 standards, homes will use approximately 53 percent less energy and nonresidential buildings will use approximately 30 percent less energy than buildings under the 2016 standards.

Title 24 California Green Building Standards Code

The California Green Building Standards Code (CCR Title 24, Part 11 code) commonly referred to as CALGreen, is a statewide mandatory construction code developed and adopted by the California Building Standards Commission and the Department of Housing and Community Development. The CALGreen standards require new residential and commercial buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency/conservation, material conservation and resource efficiency, and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt that encourage or require additional measures in the five green building topics. The most recent update to CALGreen went into effect January 1, 2017. Updates to the 2016 CALGreen Code will take effect on January 1, 2020 (2019 CALGreen). The 2019 CALGreen standards will continue to improve upon the existing standards for new construction of, and additions and alterations to, residential and nonresidential buildings.

3.3 REGIONAL

South Coast Air Quality Management District Thresholds

The South Coast Air Quality Management District (SCAQMD) formed a GHG California Environmental Quality Act (CEQA) Significance Threshold Working Group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. As of the last Working Group meeting (Meeting 15) held in September 2010, the SCAQMD is proposing to adopt a tiered approach for evaluating GHG emissions for development projects where SCAQMD is not the lead agency.

With the tiered approach, a project is compared with the requirements of each tier sequentially and would not result in a significant impact if it complies with any tier. Tier 1 excludes projects that are specifically exempt from SB 97 from resulting in a significant impact. Tier 2 excludes projects that are consistent with a GHG reduction plan that has a certified final CEQA document and complies with AB 32 GHG reduction goals. Tier 3 excludes projects with annual emissions lower than a screening threshold. The SCAQMD is proposing a screening threshold of 10,000 metric tons of CO_2e ($MTCO_2e$) per year for industrial projects and 3,000 $MTCO_2e$ for non-industrial projects. SCAQMD concluded that projects with emissions less than the screening threshold would not result in a significant cumulative impact.

Tier 4 consists of three decision tree options. Under the Tier 4 first option, SCAQMD initially outlined that a project would be excluded if design features and/or mitigation measures resulted in emissions 30 percent lower than business as usual emissions. However, the Working Group did not provide a recommendation for this approach. The Working Group folded the Tier 4 second option into the third option. Under the Tier 4 third option, a project would be excluded if it was below an efficiency-based threshold of 4.8 $MTCO_2e$ per service population per year or 3.0 $MTCO_2e$/SP/year for projects opening after 2020. Tier 5 would exclude projects that implement offsite mitigation (GHG reduction projects) or purchase offsets to reduce GHG emission impacts to less than the proposed screening level.

GHG efficiency metrics are utilized as thresholds to assess the GHG efficiency of a project on a per capita basis or on a service population basis (the sum of the number of jobs and the number of residents provided by a project) such that a project would allow for consistency with the goals of AB 32 (i.e. 1990 GHG emissions levels by 2020) and SB 32 (40 percent below 1990 levels by 2030). GHG efficiency thresholds can be determined by dividing the GHG emissions inventory goal, by the estimated population and employment. This method allows highly efficient projects with higher mass emissions to meet the overall reduction goals of AB 32 and SB 32, and is appropriate, because the threshold can be applied evenly to all project types (residential or commercial/retail only and mixed use).

Southern California Association of Governments

On April 7, 2016, the Southern California Association of Governments (SCAG) Regional Council adopted the *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS). The RTP/SCS charts a course for closely integrating land use and transportation so that the region can grow smartly and sustainably. The strategy was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. The RTP/SCS is a long-range vision plan that balances future mobility and housing needs with economic, environmental, and public health goals. The SCAG region strives toward sustainability through integrated land use and transportation planning. The SCAG region must achieve specific federal air quality standards and is required by state law to lower regional GHG emissions.

3.4 LOCAL

UC Irvine Climate Action Plan

The UCI Climate Action Plan (CAP) was initially adopted in 2007 (updated in 2016) and provides an array of climate action protection strategies for projects to reduce UCI GHG emissions. The CAP provides guidance for UCI to achieve its institutional climate protection commitments in support of UC sustainability policy and campus sustainability goals. These commitments include reduction of GHG emissions to 1990 levels by the year 2020 (a reduction of approximately 49 percent from projected emissions), climate neutrality by the year 2025 (for on-site combustion of fossil fuels and purchased electricity), and climate neutrality by the year 2050 (for UCI commuters and university-funded air travel).

University of California Sustainable Practices Policy

The UC Sustainable Practices Policy (SPP) establishes goals in nine areas including: green building, clean energy, transportation, climate protection, sustainable operations, waste reduction and recycling, environmentally preferable purchasing, sustainable foodservice, and sustainable water systems.

4 SIGNIFICANCE CRITERIA AND METHODOLOGY

4.1 THRESHOLDS AND SIGNIFICANT CRITERIA

Based upon the criteria derived from CEQA Guidelines Appendix G, a project normally would have a significant effect on the environment if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Addressing GHG emissions generation impacts requires an agency to determine what constitutes a significant impact. The amendments to the CEQA Guidelines specifically allow lead agencies to determine thresholds of significance that illustrate the extent of an impact and are a basis from which to apply mitigation measures. This means that each agency is left to determine whether a project's GHG emissions would have a "significant" impact on the environment. The guidelines direct that agencies are to use "careful judgment" and "make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" a project's GHG emissions (14 CCR Section 15064.4(a)).

UCI has not adopted project-specific significance thresholds. For the Project, the SCAQMD's proposed 3,000 $MTCO_2e$ annual non-industrial screening threshold and the 2035 3.0 $MTCO_2eq$ per service population per year efficiency-based threshold has been selected as the significance threshold, as it is most applicable to the proposed Project. In addition, this analysis also utilizes the qualitative thresholds of significance set forth above from CEQA Guidelines Appendix G Section VII.

The 3,000 $MTCO_2e$/yr screening threshold represents a 90 percent capture rate (i.e. this threshold captures projects that represent approximately 90 percent of GHG emissions from new sources) and represents emissions associated with development of approximately 70 single-family dwelling units. The 3,000 $MTCO_2e$/year value is typically used in defining small projects that are considered less than significant[5].

[5] On pages 3-2 and 3-3 of the SCAQMD's *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* (October 2008) the SCAQMD notes that a GHG significance threshold based on a 90 percent emission capture rate may be more appropriate to address the long-term GHG impacts. Further, a 90 percent emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. This assertion is based on the fact that the SCAQMD estimates that these GHG emissions would account for less than one percent of future 2050 statewide GHG emissions target (85 $MMTCO_2e$/yr). In addition, these small projects would be subject to future applicable GHG control regulations that would further reduce their overall future contribution to the statewide GHG inventory.

4.2 METHODOLOGY

The Project's construction and operational emissions were calculated using the California Emissions Estimator Model version 2016.3.2 (CalEEMod). Details of the modeling assumptions and emission factors are provided in Appendix A: Greenhouse Gas Emissions Data. For construction, CalEEMod calculates emissions from off-road equipment usage and on-road vehicle travel associated with haul, delivery, and construction worker trips. The Project's construction-related GHG emissions were forecasted based on the proposed construction schedule and applying the mobile-source and fugitive dust emissions factors derived from CalEEMod. The Project's construction-related GHG emissions would be generated from off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. The Project's operations-related GHG emissions would be generated by vehicular traffic, area sources (e.g. landscaping maintenance, consumer products), electrical generation, natural gas consumption, water supply and wastewater treatment, and solid waste.

5 POTENTIAL IMPACTS AND MITIGATION

5.1 GREENHOUSE GAS EMISSIONS

Threshold 5.1 Would the Project generate GHG emissions, either directly or indirectly, that could have a significant impact on the environment?

Verano 8 Graduate Student Housing

Short-Term Construction Greenhouse Gas Emissions

The Project would result in direct GHG emissions from construction. The duration of construction associated with the Project is estimated to last up to 26 months. The Project would require a net cut of approximately 14,000 cy of soil. Construction-related emissions were calculated using CalEEMod, which is designed to model emissions for land use development projects, based on typical construction requirements. The approximate daily GHG emissions generated by construction equipment utilized to build the Project are included in Table 2: Construction-Related Greenhouse Gas Emissions.

Table 2: Construction-Related Greenhouse Gas Emissions

Category	$MTCO_2e$
Total Construction Emissions	1,272
30-Year Amortized Construction	42
Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.	

As shown in Table 2, Project construction would generate approximately 1,272 $MTCO_2e$ of GHG emissions. Construction GHG emissions are typically summed and amortized over the Project's lifetime (assumed to be 30 years), then added to operational emissions[6]. The amortized Project emissions would be 42 $MTCO_2e$ per year. Upon Project completion, construction-related GHG emissions would cease.

Long-Term Operational Greenhouse Gas Emissions

Operational or long-term emissions would occur over the Project's life. The Project's operational GHG emissions would result from direct emissions such as Project-generated vehicular traffic, on-site combustion of natural gas, and operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power, the energy required to convey water to the Project site and wastewater from the Project site, the emissions associated with solid waste generated from the Project site, and any fugitive refrigerants from air conditioning or refrigerators. The Project's total operational GHG emissions are summarized in Table 3: Project Greenhouse Gas Emissions. As shown in Table 3, Project operational GHG emissions, combined with construction-related GHG emissions, would generate approximately 2,434 $MTCO_2e$ annually. The Project would not exceed the SCAQMD GHG threshold of 3,000 $MTCO_2e$ per year. Additionally, as the Project involves 1,200 beds, the service population would also be 1,200 residents resulting in 2.02 $MTCO_2e$

6 The project lifetime is based on the standard 30-year assumption of the South Coast Air Quality Management District (South Coast Air Quality Management District, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13,* August 26, 2009).

per service population per year, which is below the 3.0 $MTCO_2e$ threshold. Thus, Project-related GHG emissions would be less than significant and no mitigation is required.

Table 3: Verano 8 – Greenhouse Gas Emissions

Emissions Source	$MTCO_2e$ per Year
Construction Amortized Over 30 Years	42
Area Source	7
Energy	1,184
Mobile	890
Waste	90
Water and Wastewater	221
Total	**2,434**
SCAQMD Project Screening Threshold	*3,000*
Service Population[1]	*1,200*
Project GHG Efficiency ($MTCO_2e$ per Service Population per Year)	*2.02*
GHG Efficiency Target ($MTCO_2e$ per Service Population per Year)	*3.0*
Exceeds Threshold?	**No**

1. Service population based on number of proposed beds.

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

LRDP Student Housing Amendment

The LRDP EIR determined that implementation of the LRDP would increase GHG emissions from construction and operations, particularly from vehicle operations. However, GHG emissions would be less than significant. The 2007 LRDP designated growth for up to 17,637 beds. The proposed Housing Amendment would increase the total capacity to 22,350 beds, an increase of 4,713 beds in graduate and undergraduate housing. To analyze the LRDP Student Housing Amendment, the 4,713 beds were assumed to result in 1,185,000 square feet of residential space. Mobile source emissions are based on the *UCI Verano 8 Student Housing Project and LRDP Housing Amendment Traffic Study* (Stantec, June 2019), which the LRDP Student Housing Amendment would generate 4,951 daily vehicle trips. Operational emissions associated with the LDRP Student Housing Amendment are summarized in Table 4: LRDP Student Housing Amendment – Operational Emissions. Table 4 shows that operational emissions would not exceed SCAQMD thresholds.

LRDP Amendment would increase the overall student housing capacity, no changes to student enrollment or the Academic and Support square footage capacity would occur. The LRDP Student Housing Amendment changes would provide infill residential development on the campus and reduce the need to travel from off-site locations, thereby reducing associated mobile source emissions. Table 4 shows that emissions associated with the LRDP Housing Amendment would be less than significant. Additionally, LRDP Housing Amendment operational emissions represent a small proportion of what was anticipated in the LRDP EIR and would not change the severity of impacts or require new mitigation measures. Therefore, no new impacts or a substantial increase in the severity of a previously identified significant impacts evaluated in the Final EIR would occur. Additionally, no new information of substantial importance that was not known and could not have been known at the time the Final EIR was certified is available that would change the significance determination in the Final EIR.

Table 4: LRDP Student Housing Amendment – Greenhouse Gas Emissions

Emissions Source	$MTCO_2e$ per Year
Area Source	33
Energy	2,514
Mobile	2,878
Waste	218
Water and Wastewater	656
Total	**6,298**
Service Population[1]	*4,713*
Project GHG Efficiency ($MTCO_2e$ per Service Population per Year)	*1.33*
GHG Efficiency Target ($MTCO_2e$ per Service Population per Year)	*3.0*
Exceeds Threshold?	**No**

1. Service population based on number of proposed beds.

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

5.2 GREENHOUSE GAS REDUCTION PLAN COMPLIANCE

Threshold 5.2 Would the Project conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions?

Verano 8 Graduate Student Housing

The UC SPP establishes goals and policies to reduce GHG emissions from various sources at UCI. In addition, the CAP in cooperation with AB 32 has guided an array of climate action protection strategies and projects to reduce UCI GHG emissions. The purpose of the CAP is to identify UCI's long-term vision and commitment to reduce its GHG emissions in support of the UC SPP and campus sustainability goals. These commitments include reducing GHG emissions to 1990 levels by the year 2020 (a reduction of approximately 49 percent from projected emissions), carbon neutrality by the year 2025 (for on-site combustion of fossil fuels and purchased electricity), and carbon neutrality by the year 2050 (for UCI commuters and university-funded air travel). The CAP does not contain project-specific GHG thresholds.

The Project would be subject to the UC SPP, which includes goals in various areas of sustainable practices including green building design, clean energy, climate protection, sustainable transportation, sustainable building operations for campuses, zero waste, sustainable procurement, sustainable food services, sustainable water systems and sustainability at UC Health. Specific to the Project, all new buildings are required to outperform the California Building Code energy-efficiency standards (Title 24) by at least 20 percent or meet whole-building energy performance targets identified in the policy. On-site fossil fuel combustion is prohibited, and buildings are required to achieve U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) "Silver" standards at minimum and strive to achieve LEED "Gold" or higher. The Project would not conflict with any of the policy's sustainable practices, including campus-wide clean energy, energy efficiency, and renewable energy, and sustainable transportation.

Additionally, the Project would be subject to the UCI CAP. Development of the Project would provide more on-campus housing for the UCI student body. The Project's GHG emissions (2,434 $MTCO_2e$ per year) would be below SCAQMD thresholds. These emissions are anticipated to decline in future years with continued implementation of the UCI CAP. Furthermore, the LRDP Amendment would increase the overall student housing capacity on the campus from 50 to 60 percent, which would further reduce GHG emissions from mobile sources as fewer students would need to commute to campus. The change would accommodate anticipated planned growth and reduce associated vehicle emissions by reducing total vehicle trips and creating shorter trip lengths by providing on-campus infill residential development, reducing the need to travel from off-site locations. The Project demonstrates consistency with CAP goals, measures, and emission reduction targets and would not conflict with any applicable plan, policy, or regulation adopted to reduce GHG emissions, including Title 24, AB 32, and SB 32. Therefore, Project impacts would be less than significant.

LRDP Student Housing Amendment

The LRDP EIR identified various existing UCI emissions reductions programs, including alternative fuel use, green building programs, sustainable landscaping, shuttle programs, transportation demand management programs, on-campus, housing, and waste prevention and recycling. Additional University of California reduction strategies include green building design for new buildings and renovations, clean energy standards, climate protection practices, sustainable transportation practices, sustainable operations, recycling and waste management, and environmentally preferable purchasing practices. Student housing that would be developed under the LRDP Student Housing Amendment would also be subject to the UCI CAP and the various emissions reduction programs identified above. Therefore, there would not be any new or substantially more severe environmental impacts.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

5.3 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

Cumulative Setting

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately one day), GHGs have much longer atmospheric lifetimes of one year to several thousand years that allow them to be dispersed around the globe.

Cumulative Impacts and Mitigation Measures

It is generally the case that an individual development of the Project's size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory. GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective. The additive effect of Project-related GHG emissions would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the Project as well as other cumulative related projects, would be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As shown in Table 3, the Project's GHG emissions would be less than significant. Additionally, as discussed above, the Project would be consistent with the UCI CAP. As a result, the Project would not conflict with any GHG reduction plans. Therefore, the Project's cumulative contribution of GHG emissions would be less than significant and the Project's cumulative GHG impacts would also be less than cumulatively considerable.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6 REFERENCES

1. California Air Resources Board, *California's 2017 Climate Change Scoping Plan,* 2017.
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5. Southern California Association of Governments, *Regional Transportation Plan/Sustainable Communities Strategy*, 2016.
6. South Coast Air Quality Management District, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13*, 2009.
7. Stantec, *UCI Verano 8 Student Housing Project and LRDP Housing Amendment Traffic Study*, June 2019.
8. University of California, *Policy of Sustainable Practices*, 2018.
9. University of California, Irvine, *Climate Action Plan*, 2016.
10. U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016*, 2018.
11. U.S. EPA, *Methane and Nitrous Oxide Emission from Natural Sources*, 2010.
12. U.S. EPA, *Overview of Greenhouse Gases*, 2018.

Appendix A

Greenhouse Gas Emissions Data

UCI LRDP Housing Amendment
Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	1,885.00	Dwelling Unit	49.61	1,885,000.00	5391

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	549	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - per SCE 2017 Sustainability Report

Land Use - apartments mid rise = student housing, 2.5 beds per DU

Construction Phase - operational only run

Off-road Equipment -

Demolition -

Grading - anticipated earthwork (balanced)

Vehicle Trips - trip generation per housing amendment traffic study

Woodstoves - no hearths

Area Coating -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation - per CBC 2019 and UC Policy

Water Mitigation -

Waste Mitigation -

Operational Off-Road Equipment -

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	50.00	0.00
tblConstructionPhase	PhaseEndDate	6/9/2020	3/31/2020
tblFireplaces	NumberGas	1,602.25	0.00
tblFireplaces	NumberNoFireplace	188.50	1,885.00
tblFireplaces	NumberWood	94.25	0.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	549
tblVehicleTrips	HO_TTP	40.60	40.00
tblVehicleTrips	HS_TTP	19.20	19.00
tblVehicleTrips	HW_TTP	40.20	41.00
tblVehicleTrips	ST_TR	6.39	2.63
tblVehicleTrips	SU_TR	5.86	2.63
tblVehicleTrips	WD_TR	6.65	2.63
tblWoodstoves	NumberCatalytic	94.25	0.00
tblWoodstoves	NumberNoncatalytic	94.25	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

<u>**Mitigated Construction**</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
		Highest		

2.2 Overall Operational

<u>**Unmitigated Operational**</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.9890	0.2244	19.4603	1.0300e-003		0.1075	0.1075		0.1075	0.1075	0.0000	31.7539	31.7539	0.0306	0.0000	32.5197
Energy	0.1162	0.9926	0.4224	6.3400e-003		0.0803	0.0803		0.0803	0.0803	0.0000	3,015.5302	3,015.5302	0.1206	0.0415	3,030.9027
Mobile	1.2775	5.6254	17.7601	0.0696	6.4579	0.0511	6.5091	1.7295	0.0476	1.7770	0.0000	6,417.8770	6,417.8770	0.2608	0.0000	6,424.3966
Waste						0.0000	0.0000		0.0000	0.0000	176.0135	0.0000	176.0135	10.4021	0.0000	436.0659
Water						0.0000	0.0000		0.0000	0.0000	38.9636	612.4435	651.4072	4.0343	0.1012	782.4184
Total	**9.3826**	**6.8424**	**37.6428**	**0.0770**	**6.4579**	**0.2389**	**6.6968**	**1.7295**	**0.2353**	**1.9648**	**214.9771**	**10,077.6046**	**10,292.5817**	**14.8484**	**0.1427**	**10,706.3034**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.9890	0.2244	19.4603	1.0300e-003		0.1075	0.1075		0.1075	0.1075	0.0000	31.7539	31.7539	0.0306	0.0000	32.5197
Energy	0.0981	0.8385	0.3568	5.3500e-003		0.0678	0.0678		0.0678	0.0678	0.0000	2,500.9655	2,500.9655	0.0994	0.0345	2,513.7391
Mobile	0.9624	3.6343	9.3841	0.0312	2.7465	0.0246	2.7711	0.7355	0.0229	0.7584	0.0000	2,874.8605	2,874.8605	0.1322	0.0000	2,878.1657
Waste						0.0000	0.0000		0.0000	0.0000	88.0067	0.0000	88.0067	5.2011	0.0000	218.0330
Water						0.0000	0.0000		0.0000	0.0000	31.1709	519.7304	550.9013	3.2290	0.0813	655.8466
Total	**9.0495**	**4.6972**	**29.2012**	**0.0375**	**2.7465**	**0.1999**	**2.9464**	**0.7355**	**0.1982**	**0.9337**	**119.1776**	**5,927.3102**	**6,046.4878**	**8.6923**	**0.1158**	**6,298.3040**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	3.55	31.35	22.43	51.25	57.47	16.32	56.00	57.47	15.79	52.48	44.56	41.18	41.25	41.46	18.83	41.17

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/1/2020	3/31/2020	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9624	3.6343	9.3841	0.0312	2.7465	0.0246	2.7711	0.7355	0.0229	0.7584	0.0000	2,874.8605	2,874.8605	0.1322	0.0000	2,878.1657
Unmitigated	1.2775	5.6254	17.7601	0.0696	6.4579	0.0511	6.5091	1.7295	0.0476	1.7770	0.0000	6,417.8770	6,417.8770	0.2608	0.0000	6,424.3966

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	4,957.55	4,957.55	4957.55	17,026,544	7,241,312
Total	4,957.55	4,957.55	4,957.55	17,026,544	7,241,312

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	41.00	19.00	40.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,529.8599	1,529.8599	0.0808	0.0167	1,536.8627
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,866.0331	1,866.0331	0.0986	0.0204	1,874.5747
NaturalGas Mitigated	0.0981	0.8385	0.3568	5.3500e-003		0.0678	0.0678		0.0678	0.0678	0.0000	971.1056	971.1056	0.0186	0.0178	976.8764
NaturalGas Unmitigated	0.1162	0.9926	0.4224	6.3400e-003		0.0803	0.0803		0.0803	0.0803	0.0000	1,149.4971	1,149.4971	0.0220	0.0211	1,156.3280

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.15408e+007	0.1162	0.9926	0.4224	6.3400e-003		0.0803	0.0803		0.0803	0.0803	0.0000	1,149.4971	1,149.4971	0.0220	0.0211	1,156.3280
Total		**0.1162**	**0.9926**	**0.4224**	**6.3400e-003**		**0.0803**	**0.0803**		**0.0803**	**0.0803**	**0.0000**	**1,149.4971**	**1,149.4971**	**0.0220**	**0.0211**	**1,156.3280**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.81978e+007	0.0981	0.8385	0.3568	5.3500e-003		0.0678	0.0678		0.0678	0.0678	0.0000	971.1056	971.1056	0.0186	0.0178	976.8764
Total		**0.0981**	**0.8385**	**0.3568**	**5.3500e-003**		**0.0678**	**0.0678**		**0.0678**	**0.0678**	**0.0000**	**971.1056**	**971.1056**	**0.0186**	**0.0178**	**976.8764**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	7.49344e+006	1,866.0331	0.0986	0.0204	1,874.5747
Total		**1,866.0331**	**0.0986**	**0.0204**	**1,874.5747**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	6.14347e+006	1,529.8599	0.0808	0.0167	1,536.8627
Total		**1,529.8599**	**0.0808**	**0.0167**	**1,536.8627**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.9890	0.2244	19.4603	1.0300e-003		0.1075	0.1075		0.1075	0.1075	0.0000	31.7539	31.7539	0.0306	0.0000	32.5197
Unmitigated	7.9890	0.2244	19.4603	1.0300e-003		0.1075	0.1075		0.1075	0.1075	0.0000	31.7539	31.7539	0.0306	0.0000	32.5197

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	tons/yr										MT/yr					
Architectural Coating	0.5898					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.8115					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.5878	0.2244	19.4603	1.0300e-003		0.1075	0.1075		0.1075	0.1075	0.0000	31.7539	31.7539	0.0306	0.0000	32.5197
Total	**7.9890**	**0.2244**	**19.4603**	**1.0300e-003**		**0.1075**	**0.1075**		**0.1075**	**0.1075**	**0.0000**	**31.7539**	**31.7539**	**0.0306**	**0.0000**	**32.5197**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.5898					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.8115					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.5878	0.2244	19.4603	1.0300e-003		0.1075	0.1075		0.1075	0.1075	0.0000	31.7539	31.7539	0.0306	0.0000	32.5197
Total	**7.9890**	**0.2244**	**19.4603**	**1.0300e-003**		**0.1075**	**0.1075**		**0.1075**	**0.1075**	**0.0000**	**31.7539**	**31.7539**	**0.0306**	**0.0000**	**32.5197**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

Category	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	550.9013	3.2290	0.0813	655.8466
Unmitigated	651.4072	4.0343	0.1012	782.4184

7.2 Water by Land Use

Unmitigated

Land Use	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
	Mgal	MT/yr			
Apartments Mid Rise	122.815 / 77.4271	651.4072	4.0343	0.1012	782.4184
Total		**651.4072**	**4.0343**	**0.1012**	**782.4184**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
Apartments Mid Rise	98.2523 / 72.704	550.9013	3.2290	0.0813	655.8466
Total		**550.9013**	**3.2290**	**0.0813**	**655.8466**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	88.0067	5.2011	0.0000	218.0330
Unmitigated	176.0135	10.4021	0.0000	436.0659

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

Apartments Mid Rise	867.1	176.0135	10.4021	0.0000	436.0659
Total		**176.0135**	**10.4021**	**0.0000**	**436.0659**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	433.55	88.0067	5.2011	0.0000	218.0330
Total		**88.0067**	**5.2011**	**0.0000**	**218.0330**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C

Traffic Study

UCI Verano 8 Student Housing Project and LRDP Housing Amendment Traffic Study

University of California, Irvine

June 24, 2019

Prepared for:

UC Irvine Physical and Environmental Planning

Prepared by:

Stantec Consulting Service Inc.

This document entitled UCI Verano 8 Student Housing Project and LRDP Housing Amendment Traffic Study was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of University of Irvine, California Physical and Environmental Planning (the "Client").

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Glossary

ADT	**Average Daily Traffic.** Generally used to measure the total two-directional traffic volumes passing a given point on a roadway.
ICU	**Intersection Capacity Utilization.** A measure of the volume-to-capacity ratio for an intersection. Typically used to determine the peak hour level of service for a given set of intersection volumes.
LOS	**Level of Service.** A scale used to evaluate circulation system performance based on ICU values at intersections or volume-to-capacity ratios of arterial segments.
Peak Hour	This refers to the hour during the AM peak period (typically 7 AM to 9 AM) or the PM peak period (typically 4 PM to 6 PM) in which the greatest number of vehicle trips are generated by a given land use or are travelling on a given roadway.
V/C	**Volume-to-Capacity Ratio.** This is typically used to describe the percentage of capacity utilized by existing or projected traffic on a segment of an arterial or intersection.

1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has performed a traffic impact analysis for Verano 8, a proposed graduate student housing development at the University of California, Irvine (UCI) campus. Verano 8 is located on an approximately 7.8-acre site in the East Campus, southwest of the California Avenue and Adobe Circle (North) intersection. The purpose of the analysis is to determine the amount of traffic generated by Verano 8 and potential traffic related significant impacts on the affected portions of the circulation system.

Also contained in this report is a traffic impact analysis for UCI's proposed Housing Amendment to the 2007 UCI Long Range Development Plan (LRDP). The Housing Amendment would change land use designations within two traffic analysis zones and would increase the total student housing capacity. The purpose of this analysis is to identify potential traffic impacts on the surrounding circulation system as a result of the proposed Housing Amendment.

This report first discusses the Verano 8 analysis followed by the Housing Amendment analysis.

1.1 VERANO 8 OVERVIEW

The current LRDP was adopted in 2007 and established a land use plan and physical planning framework to accommodate projected enrollment levels, additional academic facilities and housing, and the on-campus circulation system through the 2025-2026 horizon year. The proposed Verano 8 site is designated as Student Housing in the LRDP and is located within a traffic analysis zone (TAZ) that is designated for Mixed Use-Residential Use, Parking and Support Facilities in the LRDP Traffic Study.

The Verano 8 site is located on the west side of California Avenue between Adobe Circle North and Adobe Circle South as shown in **Figure 1-1.** The site is predominantly vacant, except for an existing maintenance and operation facility, which would be demolished and replaced by graduate student housing. Verano 8 includes approximately 1,200 beds, a community center, a replacement maintenance and operation facility, and a 1,000-space parking structure. With the addition of Verano 8, the campus remains within the total number of beds identified in the current LRDP.

The expected on-campus vehicle ownership rate of graduate student residents is 0.75 vehicles per bed based on information provided by UCI staff. Therefore, parking will be provided at a rate of 0.75 spaces per bed. The proposed parking structure would provide approximately 1,000 spaces, primarily for resident use. If needed, additional parking for residents would be available at the existing East Campus Parking Structure (approximately 500 spaces). Covered and uncovered bicycle spaces will be provided at a rate of 0.75 spaces per bed. The Verano 8 project is discussed in detail in **Chapter 2.0**.

Figure 1-1

Project Location

1.2 LRDP HOUSING AMENDMENT OVERVIEW

The 2007 LRDP states that "UCI's academic plan identifies a goal of housing up to 50% of undergraduates and graduate students on the campus. To achieve that goal, land was designated to accommodate housing that represented approximately 50 percent of the horizon year on-campus student population"[1]. In order to accommodate the increase in student enrollment and demand for student housing, UCI proposes to increase on-campus student housing from 50 percent to 60 percent of student enrollment. **Table 1-1** summarizes the current LRDP and the proposed increase to student housing.

Table 1-1 Student Housing Summary

Description	Amount	Unit
Current LRDP Student Housing	17,637	BED
Proposed Amendment to LRDP Student Housing	22,350	BED

The additional student housing would primarily be located in what the LRDP identifies as the "Outer Campus", however will also affect existing student housing in the Academic Core. In order to accommodate the additional student housing, changes in land use designations are proposed.

1.3 ANALYSIS METHODOLOGY

The following describes the methodology used for the Verano 8 traffic impact analysis and the Housing Amendment traffic impact analysis.

1.3.1 Verano 8 Analysis Methodology

The traffic impact analysis for Verano 8 provides near term and long-range traffic conditions as required by the California Environmental Quality Act (CEQA). The following scenarios are evaluated for Verano 8:

1. Existing Conditions
2. Existing Plus Project Conditions
3. LRDP Buildout No Project
4. LRDP Buildout With Project

The study area includes an intersection located in the City of Irvine, as well as intersections and mid-block segments on the UCI main campus.

Existing volumes were counted in the field in March 2019. Project-generated traffic volumes are estimated using the UCI Main Campus Traffic Model (MCTM) and the overall distribution of project traffic

[1] Table 3-2: UCI Development Accommodated in 2007 LRDP in the 2007 Long Range Development Plan, A Framework to Guide Physical Development at the University of California, Irvine, Through 2025-2026, November 2007.

is based on trip distribution derived from the Irvine Traffic Analysis Model (ITAM). ITAM can provide off-campus trip distribution patterns whereas the UCI MCTM is limited to on-campus traffic patterns. Project trips are then added onto Existing conditions to derive Existing Plus Project conditions traffic volumes.

The long-range analysis examines Verano 8 in a LRDP buildout context. Traffic forecasts for the Verano 8 study area circulation system was derived using a combination of data from MCTM and ITAM for the long-range analysis. Buildout traffic volumes from the current LRDP represent LRDP Buildout No Project baseline conditions. For with-project conditions, traffic generated by the land use in the current LRDP was replaced by traffic generated by proposed Verano 8 land use. The analysis compares with-project volumes and no-project volumes to identify project impacts.

1.3.2 Housing Amendment Analysis Methodology

To evaluate the potential traffic impacts related to the Housing Amendment, future forecast traffic volumes were prepared using ITAM Version 15. Per the City of Irvine requirements, two future long-range settings are used in this analysis: Long-Range Interim Year Approved conditions and Buildout Approved conditions. Future forecast volumes were also obtained from the City of Newport Beach General Plan. In total, the Housing Amendment is evaluated under 6 conditions:

1. Long-Range Interim Year Approved No Project – Irvine intersections
2. Long-Range Interim Year Approved With Project (Housing Amendment) – Irvine intersections
3. Buildout Approved No Project – Irvine intersections
4. Buildout Approved With Project (Housing Amendment) – Irvine intersections
5. Buildout No Project – Newport Beach intersections
6. Buildout With Project – Newport Beach intersections

By increasing the student housing capacity, traffic volumes would be reduced overall due to more student living on campus and fewer commuters. The traffic study area therefore accounts for the change in travel patterns resulting from having more students living on campus.

For the intersections in the City of Newport Beach, future forecast volumes were obtained from the City's General Plan. The volumes represent a Post-2035 buildout of the city. Trip related to the Housing Amendment were added onto the General Plan baseline volumes to derive a with-project scenario.

1.4 PERFORMANCE CRITERIA

The traffic analysis for Verano 8 and the Housing Amendment uses a set of performance criteria for evaluating intersection capacity to determine potential project impacts. In traffic impact studies, impact criteria are based on two primary measures. The first is "capacity," which establishes the vehicle carrying ability of a road segment, and the second is "volume." The volume-to-capacity (V/C) ratio corresponds with a level of service (LOS). Traffic LOS is designated A through F, with LOS A representing free flow conditions, and LOS F representing severe traffic congestion. Traffic flow quality for the different LOS is described in **Table 1-2**.

Average daily traffic (ADT) volumes are presented for roadway links in the study area. As required by the City of Irvine, an arterial roadway segment volume to capacity (V/C) ratio analysis was conducted. The V/C ratio with and without the proposed Housing Amendment are compared and impacts are identified using the City of Irvine's performance criteria.

The traffic analysis also analyzes the AM and PM peak hour volumes for study area intersections. Peak hour volumes and capacities are compared by means of intersection capacity utilization (ICU) values for signalized intersections. For the stop-controlled study intersection, the Highway Capacity Manual (HCM) methodology for estimating intersection delay is used to determine the intersection peak hour LOS. The ICU values and vehicle delay ranges that correspond to LOS A through F are summarized in **Table 1-3.**

Both the V/C and LOS are used in identifying impacts. Certain LOS values are deemed acceptable by the various governing jurisdictions within the traffic analysis study area and increases in the V/C ratio which cause or contribute to the LOS being unacceptable are defined as an adverse impact. For intersections on the UCI campus, City of Irvine, and City of Newport Beach, LOS D is the threshold.

The City of Irvine and the City of Newport Beach have a defined performance criteria to determine a significant impact. Since UCI does not have an adopted performance criteria for intersections, the City of Irvine's performance criteria was used in the analysis to identify project impacts at on-campus signalized intersection locations. For UCI on-campus intersections and City of Irvine intersections, significant impacts are defined for this analysis as an increase of 0.02 or more in the ICU value to a deficient intersection.

For intersections in the City of Newport Beach, impacts are identified using the city's performance criteria. A significant impact occurs when an ICU at a deficient intersection increases by 0.01.

The performance criteria used in this analysis is summarized in **Table 1-4.**

Table 1-2 Level of Service Descriptions – Arterial Streets and Intersections

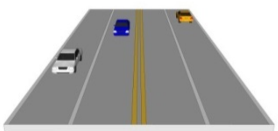
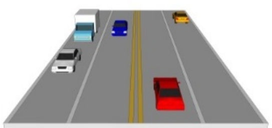
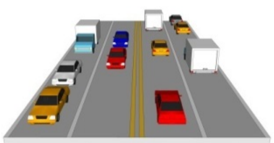
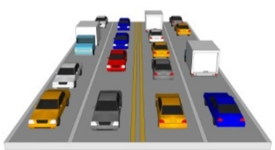
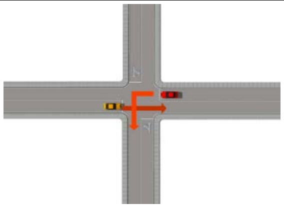
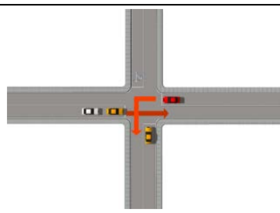
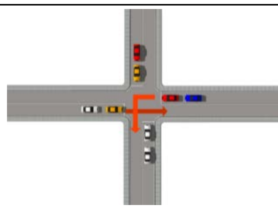
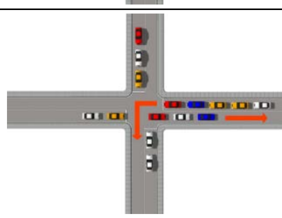
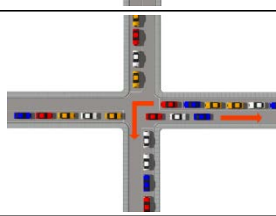
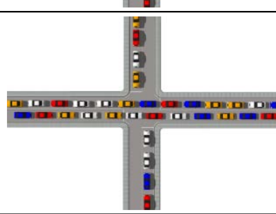
Level of Service (LOS)		Description
A		LOS A describes primarily free-flow operations. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at the intersections is minimal. The travel speed exceeds 85% of the base free-flow speed.
B		LOS B describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted, and control delay at the intersections is not significant. The travel speed is between 67% and 85% of the base free-flow speed.
C		LOS C describes stable operation. The ability to maneuver and change lanes at midsegment locations may be more restricted than at LOS B. Longer queues at the intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed.
D		LOS D indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the intersections. The travel speed is between 40% and 50% of the base free-flow speed.
E		LOS E is characterized by unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing at the intersections. The travel speed is between 30% and 40% of the base free-flow speed.
F		LOS F is characterized by flow at extremely low speed. Congestion is likely occurring at the intersections, as indicated by high delay and extensive queuing. The travel speed is 30% or less of the base free-flow speed.
Source: Highway Capacity Manual 6th Edition, Transportation Research Board, National Research Council		

Table 1-3 Intersection Level of Service Ranges (ICU and HCM Delay)

Level of Service (LOS)		Intersection Capacity Utilization (ICU)	Highway Capacity Manual (HCM) Average Delay*
A		0.00 – 0.60	0.00 – 10.0 seconds
B		0.61 – 0.70	10.1 – 15.0 seconds
C		0.71 – 0.80	15.1 – 25.0 seconds
D		0.81 – 0.90	25.1 – 35.0 seconds
E		0.91 – 1.00	35.1 – 50.0 seconds
F		Above 1.00	Above 50.0 seconds

* HCM methodology used for stop-controlled intersections
Sources: Highway Capacity Manual 6th Edition, Transportation Research Board, National Research Council
Orange County Congestion Management Program

Table 1-4 Performance Criteria

I. Arterial Roads (City of Irvine V/C Analysis)

V/C Calculation Methodology

Level of service based on average daily traffic (ADT) volume/capacity (V/C) ratios and calculated using the following capacities:

City of Irvine

Major Arterial	8 lanes	72,000
Major Arterial	6 lanes	54,000
Primary Arterial	4 lanes	32,000
Secondary Arterial	4 lanes	28,000
Commuter*	2 lanes	18,000
Commuter	2 lanes	13,000

* Applies to Harvard Avenue between Michelson Drive and University Drive and Campus Drive between Carlson Avenue and University Drive at two lanes.

As required by the City of Irvine Link Capacity Analysis guidelines, arterial deficiencies identified based on ADT V/C ratios are to be further examined using peak hour data.

Performance Standard

City of Irvine

Arterials in Irvine Planning Area 33 (Spectrum 1) and Planning Area 36 (Irvine Business Complex/IBC): Level of Service “E” (peak hour V/C less than or equal to 1.00).

All other arterials: Level of Service “D” (peak hour V/C less than or equal to 0.90).

Mitigation Requirement

For arterial roads with a V/C greater than the acceptable level of service, mitigation of the project contribution is required to bring link location back to acceptable level of service where the deficiency is caused by the project or to no project conditions or better for locations where the project adds to a deficient condition by .02 or greater for locations in the City of Irvine. Without a performance standard, no mitigation is required for arterial roads in the City of Newport Beach.

II. Intersections

V/C Calculation Methodology

Level of service based on peak hour intersection capacity utilization (ICU) values and calculated using the following assumptions:

City of Irvine

Saturation Flow Rate: 1,700 vehicles/hour/lane
Clearance Interval: .05
Right-Turn-On-Red Utilization Factor*: .75

* “De-facto” right-turn lane is assumed in the ICU calculation if 19 feet from edge to outside of through-lane exists and parking is prohibited during peak periods.

City of Newport Beach

Saturation Flow Rate: 1,600 vehicles/hour/lane
Clearance Interval: .00
Right-Turn-On-Red Utilization Factor*: .00

* “De-facto” right-turn lane is assumed in the ICU calculation if 19 feet from edge to outside of through-lane exists and parking is prohibited during peak periods.

HCM Delay Methodology

Level of service based on peak hour average intersection delay and calculated using the following assumptions:

Ideal Flow Rate: 1,900 vehicles/hour/lane
Peak Hour Factor: measured PHF at stop-controlled intersections
Percent Heavy Vehicles: 2%

Performance Standard

Intersections in Irvine Planning Area 36 (Irvine Business Complex/IBC): Level of Service “E” (peak hour ICU less than or equal to 1.00). All other intersections: Level of Service “D” (peak hour ICU less than or equal to .90).

Mitigation Requirement

For UCI intersections: For stop-controlled intersections operating greater than the performance standard, the intersection is evaluated further for possible improvement with a traffic signal, or geometric improvements to improve operations.
For signalized intersections operating greater than the performance standard, the intersection is evaluated further for possible improvements to improve operations.

For City of Irvine and City of Newport Beach Intersections: For ICU greater than the acceptable level of service, mitigation of the project contribution is required to bring intersection back to acceptable level of service where the deficiency is caused by the project or to no project conditions or better for locations where the project adds to a deficient condition by .02 or greater for locations in the City of Irvine and.01 or greater for locations in the City of Newport Beach.

2.0 VERANO 8 TRANSPORTATION SETTING AND PROJECT DESCRIPTION

This chapter describes the transportation setting and the project description for the proposed Verano 8 development. In this Chapter, existing traffic conditions in the study area are summarized and the project description is discussed in detail.

2.1 STUDY AREA

The study area encompasses five existing intersections in and around the UCI campus. The study area was defined by identifying how project trips would be distributed to the adjacent roadways and determining the limits of where project peak hour impacts become insignificant. Key intersections within the study area were selected for the peak hour analysis.

The study area limits were determined based on the above mentioned guidance, which is consistent with the Irvine Traffic Impact Analysis Guidelines. Four of the intersections are located within the UCI campus, and one intersection is located in the City of Irvine. There are no Orange County Congestion Management Program (CMP) monitoring intersections within the study area. **Figure 2-1** illustrates the study area for the project.

2.2 EXISTING CONDITIONS

The following describes the existing roadway conditions, existing traffic volumes, and existing intersection level of service.

2.2.1 Existing Roadway Conditions

The study area for the Verano 8 student housing project encompasses four existing intersections within the UCI campus and one existing intersection along the perimeter of the campus in the City of Irvine. The existing off-campus intersection is located along Campus Drive at California Avenue and is a signalized intersection. Three of the four on-campus intersections are stop-controlled, and the other intersection is a signalized intersection (California Avenue at Adobe Circle South). Intersection lane configurations and intersection controls are illustrated in **Figure 2-2**.

Campus Drive is designated as a Primary Arterial on the City of Irvine and the Orange County Master Plan of Arterial Highways (MPAH). Campus Drive begins at Bristol Street and runs in a generally northeast direction until reaching MacArthur Boulevard where it continues in a southeast direction to east of Culver Drive. Campus Drive provides four travel lanes with a raised median through the study area and represents the northeast boundary of the UCI main campus. The speed limit is 45 mph in the vicinity of the project. On-street parking is not allowed, and a striped bike lane is provided.

Figure 2-1
Verano 8 Study Area Intersection Locations
2.2

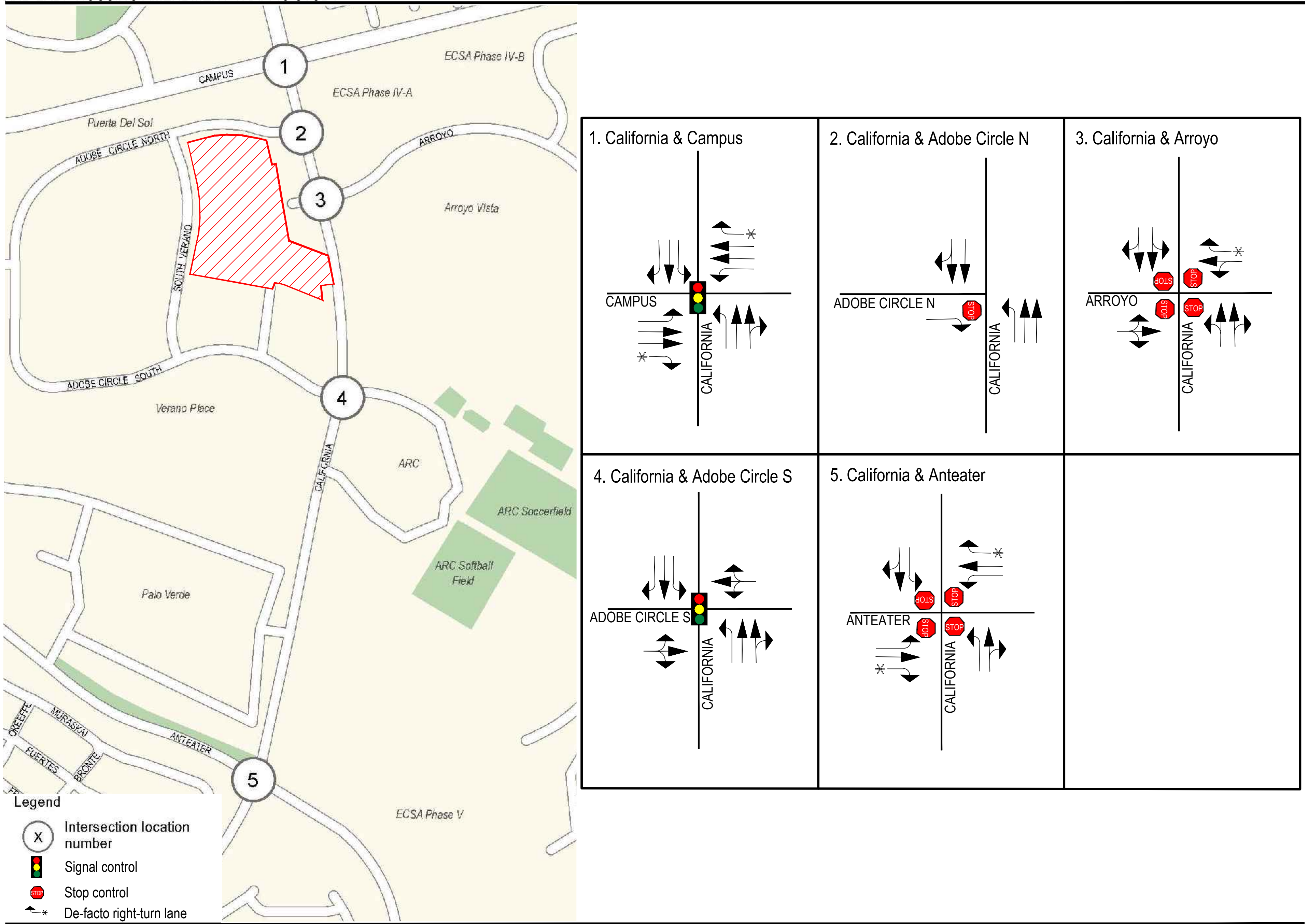


Figure 2-2

Existing Intersection Lane Configurations and Traffic Controls

California Avenue begins on-campus at the end of Los Trancos Drive south of Verano 8 and continues in a generally northeast direction until Anteater Drive where it turns toward the north and terminates north of the UCI campus at Harvard Avenue. California Avenue is designated as a Primary Arterial and is a two-lane road between Los Trancos Drive and Adobe Circle, and a four-lane road north of Adobe Circle. On-street parking is prohibited, and a striped bike lane is provided. The speed limit is 35 mph south of Adobe Circle Drive (North) and 40 mph north of Adobe Circle Drive (North).

Adobe Circle Driveis a loop road that begins at California Avenue south of Campus Drive and heads generally west then turns south and east to connect back to California Avenue at the Adobe Circle (South) intersection. The roadway has one lane in each direction and is designated as a bike-route throughout its length. The speed limit is 25 mph with no on-street parking except at a small portion west of California Avenue on Adobe Circle South.

South Verano Drive is currently a one-way street with on-street parking and a bike lane. The roadway is planning to be converted to a two-way street at some future date.

At the existing intersection of California Avenue and Arroyo Drive is currently under stop-control. The intersection is planned to be signalized at a future date.

2.2.2 Existing Conditions Traffic Volumes

Existing ADT and peak hour volumes were counted in March 2019 while classes were in session. ADT volumes were counted for key roadway segments on California Avenue, south of Campus, South of Adobe Circle North, and south of Adobe Circle South; and existing peak hour turning movement volumes were collected at the five study intersections. **Figure 2-3** illustrates the existing study area ADT and AM and PM peak hour volumes. Actual count data is included in **Appendix A**.

2.2.3 Existing Intersection Levels of Service

Existing ICU values were calculated for the signalized study intersections based on the AM and PM peak hour turning movement counts and the existing lane configurations. For the stop-controlled study intersections, the HCM delay methodology was used. Existing AM and PM peak hour ICU and delay values are summarized in **Table 2-1** (actual ICU calculation worksheets are included in **Appendix B** and delay calculations are included in **Appendix C**). As this table shows, the signalized study intersections currently operate at LOS A during the AM and PM peak hours based on the ICU methodology. The stop-controlled study intersections are currently operating at LOS C or better during the AM and PM peak hour.

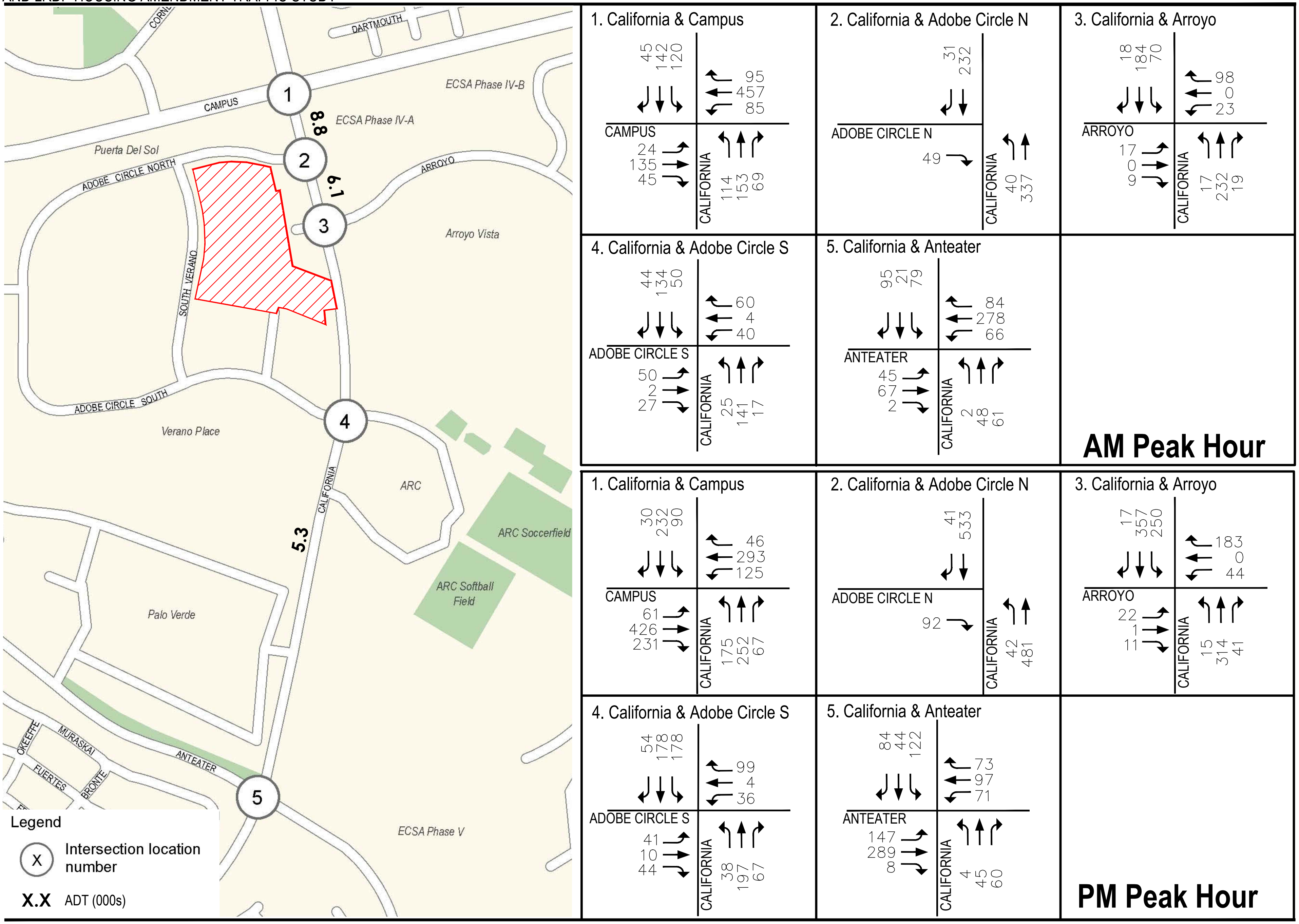


Figure 2-3

Existing ADT and Peak Hour Intersection Volumes

Table 2-1 Existing Intersection LOS Summary

Intersection	Jurisdiction	AM Peak Hour		AM Peak Hour	
		ICU/Delay	LOS	ICU/Delay	LOS
ICU Methodology - Signalized Intersections					
1. California & Campus	Irvine	0.34	A	0.49	A
4. California & Adobe Circle S	UCI	0.23	A	0.33	A
HCM Methodology - Stop-Controlled Intersections					
2. California & Adobe Circle N[1]	UCI	9.4	A	11.2	B
3. California & Arroyo[2]	UCI	9.5	A	19.6	C
5. California & Anteater[2]	UCI	11.8	B	14.3	B
For stop-controlled intersections, delay is shown in seconds [1] Delay is shown for leg under stop control [2] Average delay for intersection					

2.3 PROJECT DESCRIPTION

The proposed Verano 8 development is located on the west side of California Avenue between Adobe Circle North and Adobe Circle South. The site is predominantly vacant, except for an existing maintenance and operation facility (6 TSF) that would be demolished and replaced by 50 TSF of graduate student housing, consisting of approximately 1,200 new beds, a 28 TSF community center, a 10.5 TSF replacement maintenance and operation facility, and a 1,000-space parking structure. The proposed project site plan is illustrated in **Figure 2-4**.

With the addition of Verano 8, the campus remains within the total number of beds identified in the campus current LRDP. Residents of the proposed Verano 8 student housing will primarily be graduate students and approximately 75 percent of the student residents would own a vehicle on campus.

2.4 TRIP GENERATION

Trip generation rates for Verano 8 were derived from the MCTM and are based on a 75 percent vehicle ownership factor for graduate students (derivation of the trip rates is included in **Appendix D**). **Table 2-2** summarizes the estimated trip generation for Verano 8. As shown in the table, Verano 8 would generate approximately 1,900 daily trips, 100 trips during the AM peak hour and 130 trips during the PM peak hour.

As previously mentioned, the site currently has an existing 6 TSF facility. For trip generation purposes, the net new support service of 4.5 TSF would generate approximately 54 daily trips which is negligible and would generate a minimal number of peak hour trips; four trips during the AM (7 AM – 9 AM) and five trips during the PM (4 PM – 6 PM) peak hours.

The current LRDP designated future student housing growth at the Verano 8 site. Traffic volumes that corresponds with the current LRDP land use is shown in this report under LRDP Buildout No Project conditions. Compared with the land use assumptions in the current LRDP for the project site, Verano 8 would generate 142 fewer daily trips, and 9 fewer trips during the AM and PM peak hour.

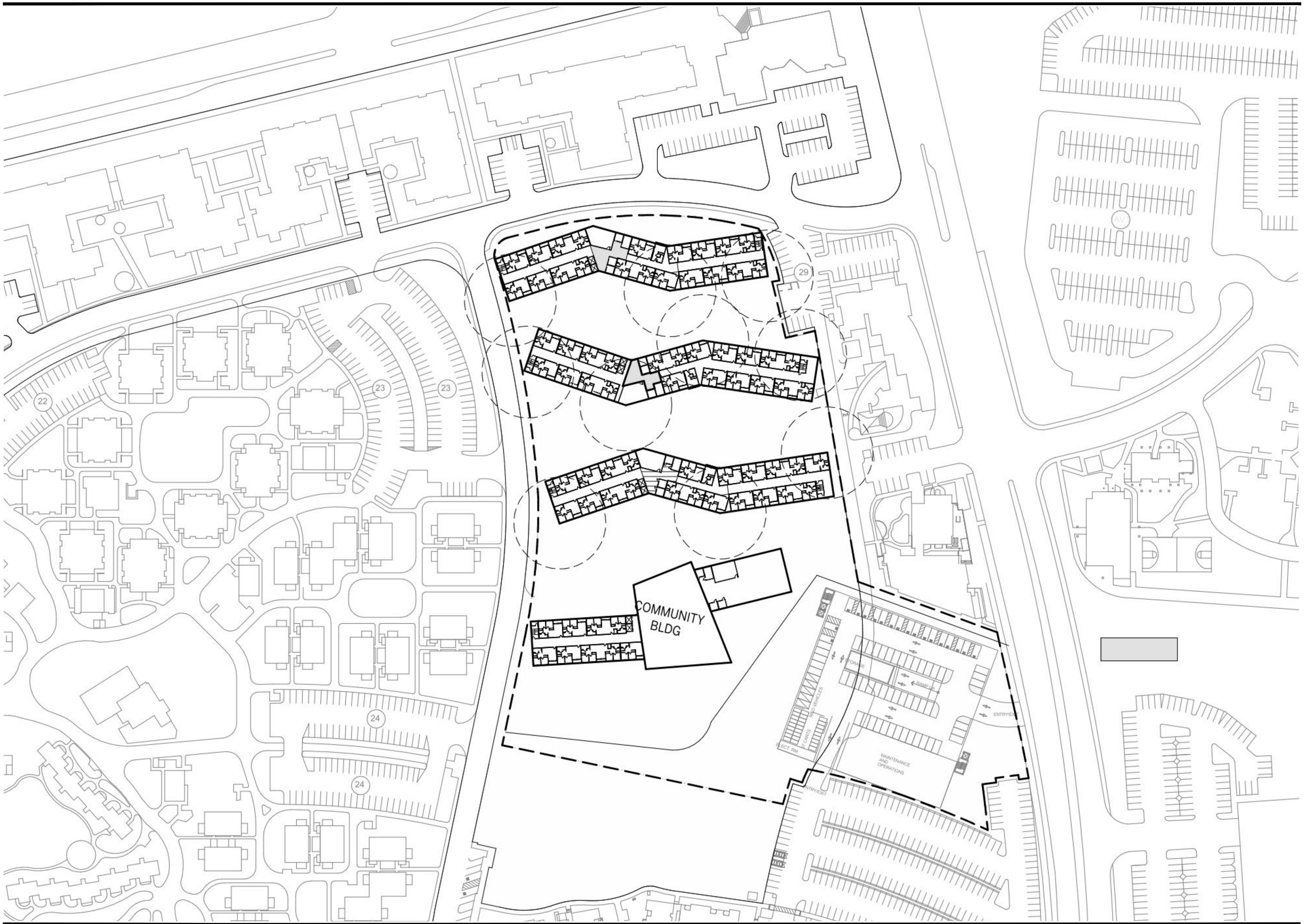


Figure 2-4

Project Site Plan

2.7

Table 2-2 Verano 8 Trip Generation Summary

Land Use	Amount	Units	AM Peak Hour			PM Peak Hour			
			In	Out	Total	In	Out	Total	ADT
Trip Rates									
Graduate Housing[2]	BED		0.008	0.050	0.058	0.069	0.042	0.111	1.500
Support	TSF		0.762	0.190	0.952	0.381	0.762	1.143	12.000
Trip Generation – Verano 8									
Graduate Housing	1200	BED	9	95	104	83	50	133	1,800
Net New Support (see below)	4.5	TSF	3	1	4	2	3	5	54
Total			12	96	104	85	53	133	1,854
Support Trips[1]									
Existing Support	6	TSF	5	1	6	2	5	7	72
New Support	10.5	TSF	8	2	10	4	8	12	126
Net Increase in Support Trips			3	1	4	2	3	5	54
LRDP Buildout									
Current LRDP TAZ 62/85	2521 BED/15 TSF		31	203	234	179	117	296	3,962
TAZ 62/85 with Project	2427 BED/15 TSF		30	195	225	173	114	287	3,820
Total Buildout Adjustment			-1	-8	-9	-6	-3	-9	-142

Source: UCI Main Campus Traffic Model (MCTM)

[1] The existing maintenance and operations facility would be replaced by a new facility

[2] Assumes graduate student permit take rate of 0.75

ADT = average daily trips

TSF = thousand square feet

2.5 TRIP DISTRIBUTION

Trips generated by the project would primarily use Campus Drive and California Avenue for access to and from Verano 8. The trip distribution was determined using ITAM. Approximately 56 percent of project trips are oriented towards north on California Avenue, of which 16 percent are oriented to the west on Campus Drive, 20 percent to the east on Campus Drive that continue along north on Culver Drive, and 20 percent continue north on California Avenue to Harvard Avenue. Forty-four percent of the project trips are oriented towards south on California Avenue, of which 8 percent of project trips are oriented west on Anteater Drive towards Bison Avenue, and 36 percent of project trips are oriented toward Culver Drive/Bonita Canyon Drive to the south via Vista Del Campo or Anteater Drive.

Figure 2-5 illustrates the general distribution for the proposed Verano 8 project. **Figure 2-6** illustrates the ADT and peak hour project-generated trips, based on the distribution presented here.

Figure 2-5
Project Trip Distribution

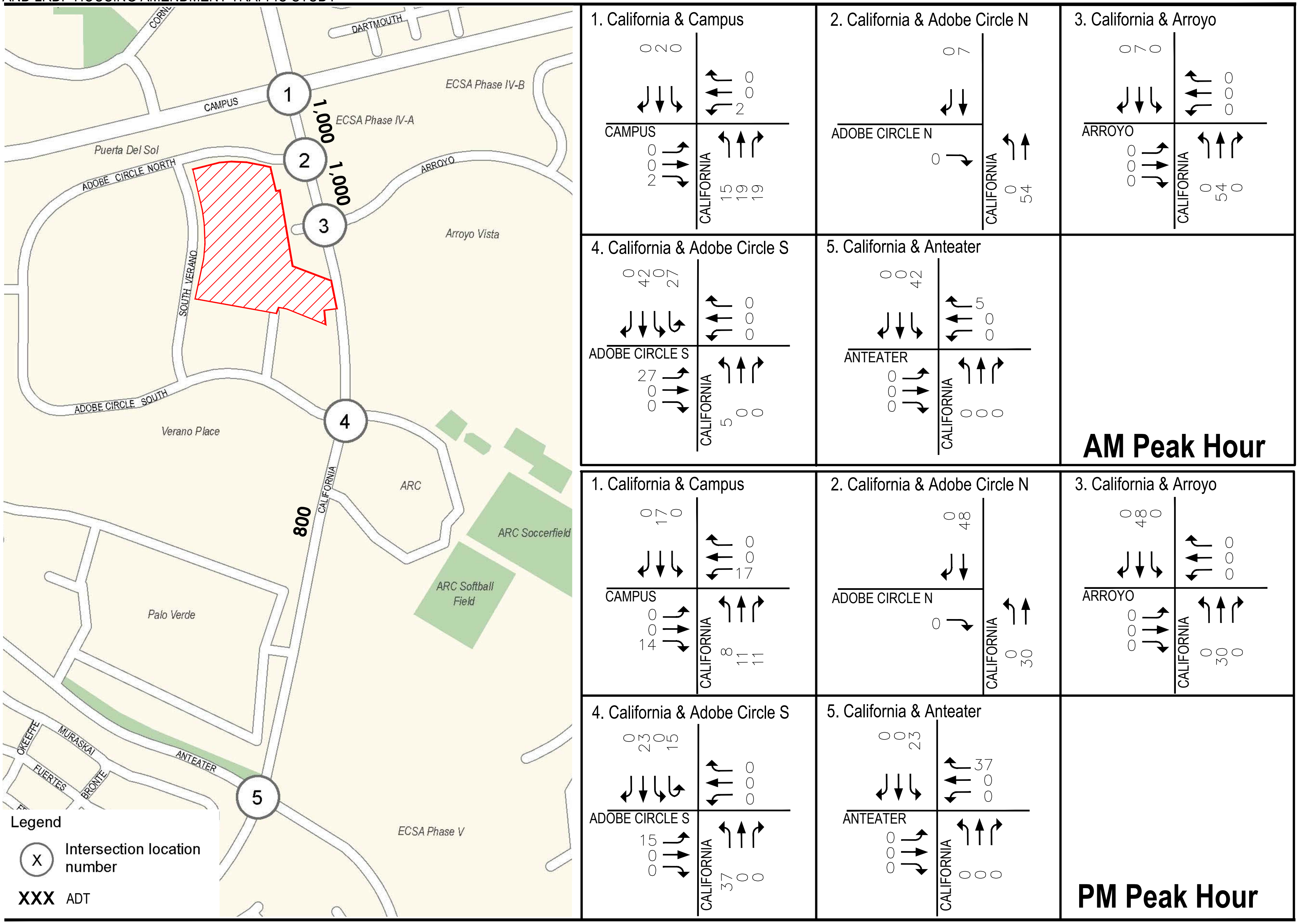


Figure 2-6

Project-Generated ADT and Peak Hour Intersection Volumes

3.0 VERANO 8 IMPACT ANALYSIS

This chapter presents traffic volumes and evaluates potential project impacts at the study area intersections. Project increases resulting in significant impacts, if any, are discussed and mitigation measures are identified if necessary.

3.1 EXISTING PLUS PROJECT ANALYSIS

Impacts from Verano 8 are analyzed under Existing plus Project conditions. Existing plus Project peak hour volumes were obtained by adding the project-generated peak hour trips, presented in **Section 2.4**, to the existing intersection turning movement volumes at the study intersections.

Figure 3-1 illustrates the Existing plus Project conditions ADT and peak hour volumes at the study intersections. The Existing conditions and Existing plus Project conditions LOS are based on existing lane configurations summarized in **Table 3-1** (the ICU calculation worksheets are included in **Appendix B**, and HCM delay calculation worksheets are included in **Appendix C**).

Table 3-1 Existing Plus Project Intersection LOS Summary

		Existing				Existing + Project			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Description	**Jurisdiction**	**ICU/ Delay**	**LOS**	**ICU/ Delay**	**LOS**	**ICU/ Delay**	**LOS**	**ICU/ Delay**	**LOS**
ICU Methodology - Signalized Intersections									
1. California & Campus	Irvine	0.34	A	0.49	A	0.35	A	0.52	A
4. California & Adobe Circle S	UCI	0.23	A	0.33	A	0.28	A	0.35	A
HCM Methodology - Stop-Controlled Intersections									
2. California & Adobe Circle N	UCI	9.4	A	11.2	B	9.4	A	11.5	B
3. California & Arroyo	UCI	9.5	A	19.6	C	9.8	A	22.5	C
5. California & Anteater	UCI	11.8	B	14.3	B	12.3	B	14.9	C
For stop-controlled intersections, delay is shown in seconds									

As this table shows, the signalized study intersection continues to have an ICU that corresponds to LOS A with the addition of project traffic, and the stop-controlled intersections continue to operate at LOS C or better during the AM and PM peak hours. Therefore, Verano 8 has a less than significant impact on the on-campus and off-campus study intersections, and no mitigation is necessary.

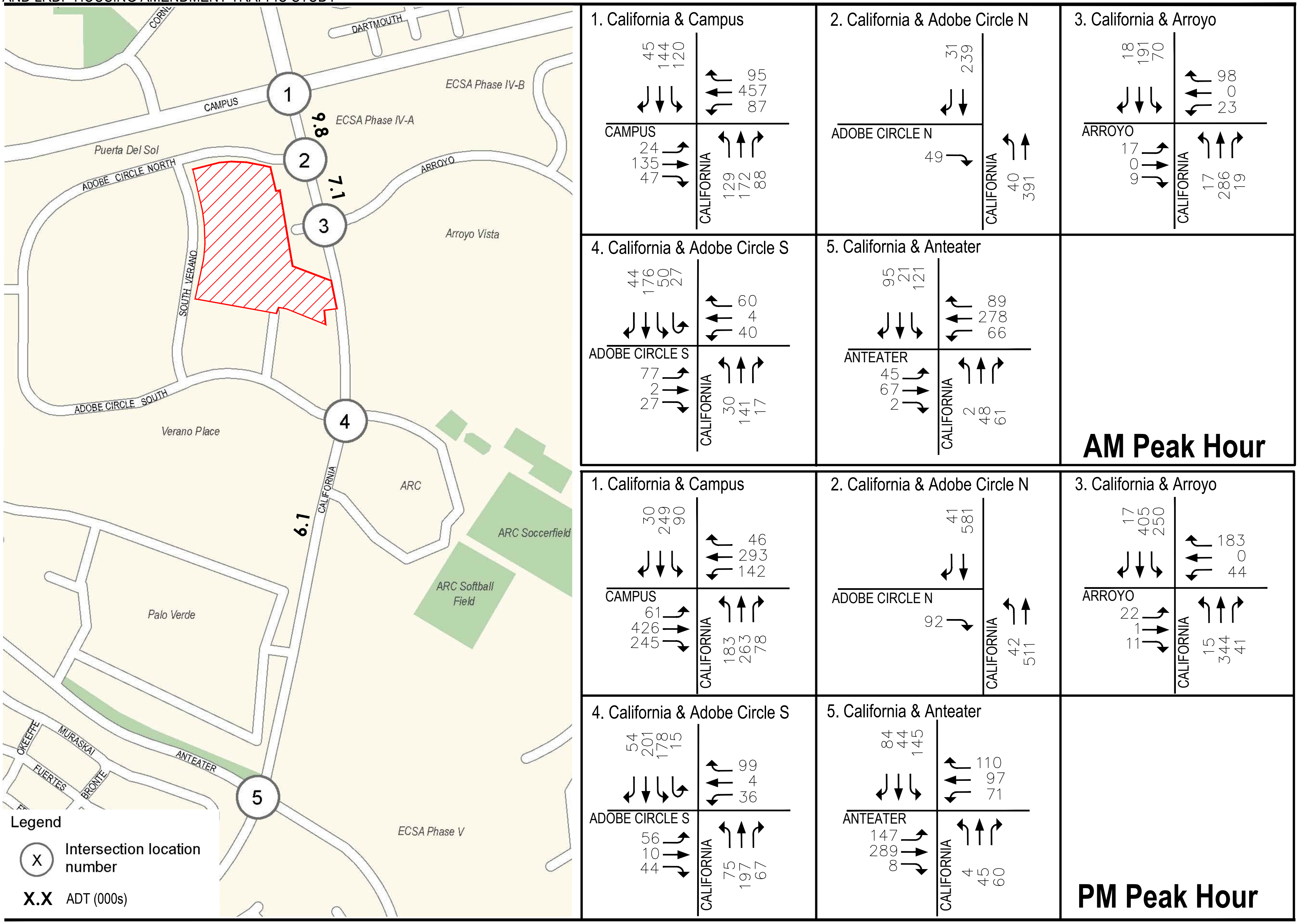


Figure 3-1

Existing Plus Project ADT and Peak Hour Intersection Volumes

3.2 LONG-RANGE ANALYSIS

The following discusses the results of the impact analysis in the long-range setting.

3.2.1 LRDP Buildout No Project Conditions

The current LRDP assumes student housing growth on the Verano 8 project site. For the long-range baseline setting, buildout of the current LRDP is assumed. The long-range baseline volumes for this analysis were obtained from the UCI MCTM and ITAM. Buildout volumes for on-campus intersections came from the MCTM, and volumes for the off-campus intersection was obtained from ITAM Version 15, Buildout Approved Scenario. Forecast volumes from the MCTM were factored to the ITAM forecasts. **Figure 3-2** illustrates the future forecast volumes for the LRDP Buildout No Project scenario.

Table 3-2 summarizes the LOS for intersections under LRDP Buildout No Project conditions. The current LRDP shows that the intersection of California Avenue at Arroyo Drive will be signalized in the future setting. The intersection of California Avenue at Adobe Circle North and the intersection of California Avenue at Anteater would remain stop-controlled under LRDP buildout conditions. Under LRDP Buildout No Project conditions, with the above assumptions, all study intersections would operate at LOS C or better during the AM and PM peak hours based on the LRDP Traffic Study.

3.2.2 LRDP Buildout With Project Conditions

Figure 3-3 illustrates the LRDP Buildout with Project ADT and peak hour volumes. **Table 3-2** summarizes the LRDP Buildout without Project and with Project LOS for the study intersections (the ICU calculation worksheets are included in **Appendix B**, and HCM delay calculation worksheets are included in **Appendix C**).

The intersection of California Avenue and Anteater Drive would operate at LOS C during the AM and PM peak hour under conditions without and with Verano 8. All other study intersections would operate at LOS B or better during the AM and PM peak hours under buildout conditions with the addition of the proposed project.

The study intersections will operate at acceptable LOS under long-range conditions. Buildout of the project has less than significant impact on the study intersections under LRDP buildout conditions; therefore, no mitigation is necessary.

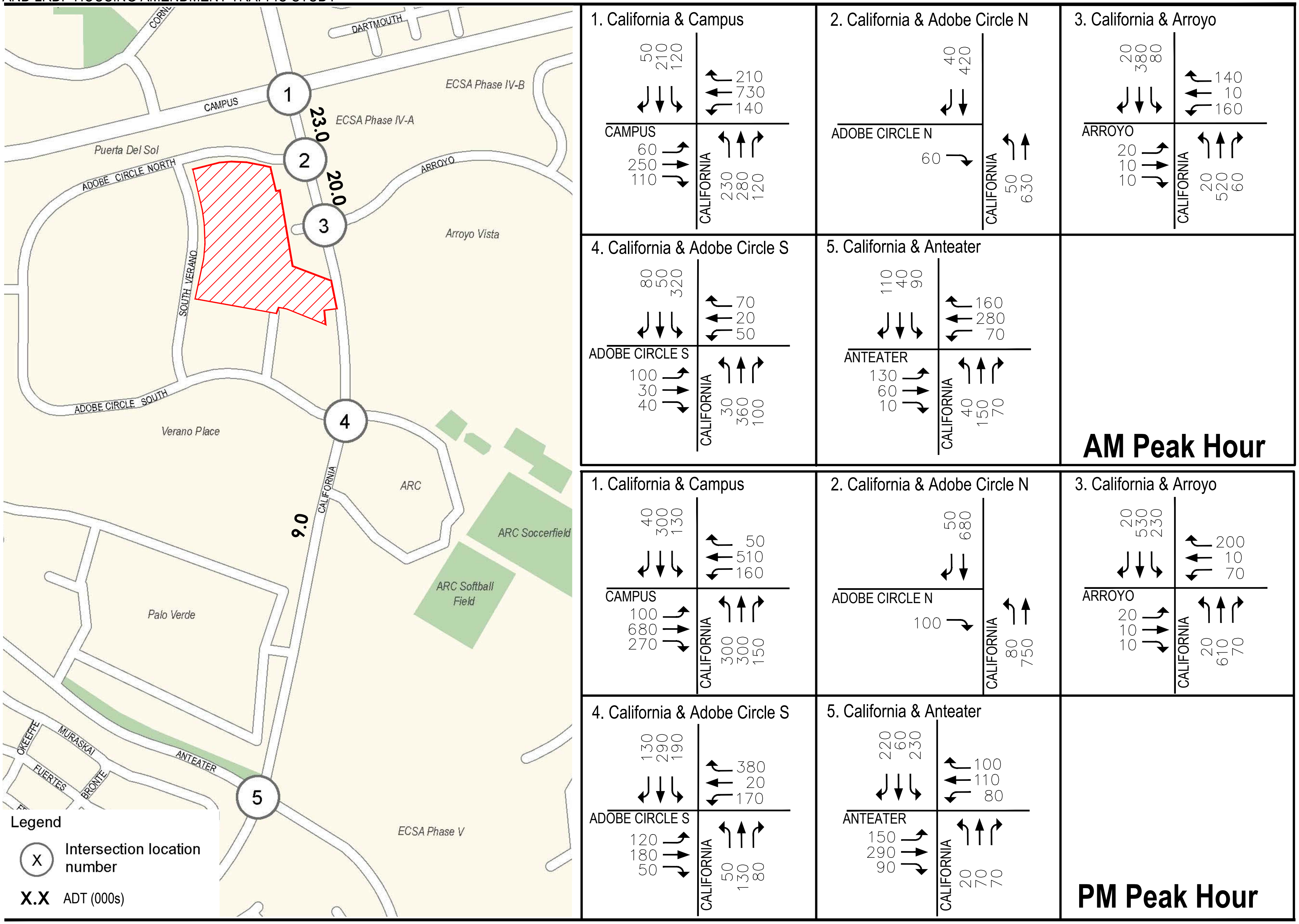


Figure 3-2
LRDP Buildout No Project ADT and Peak Hour Intersection Volumes

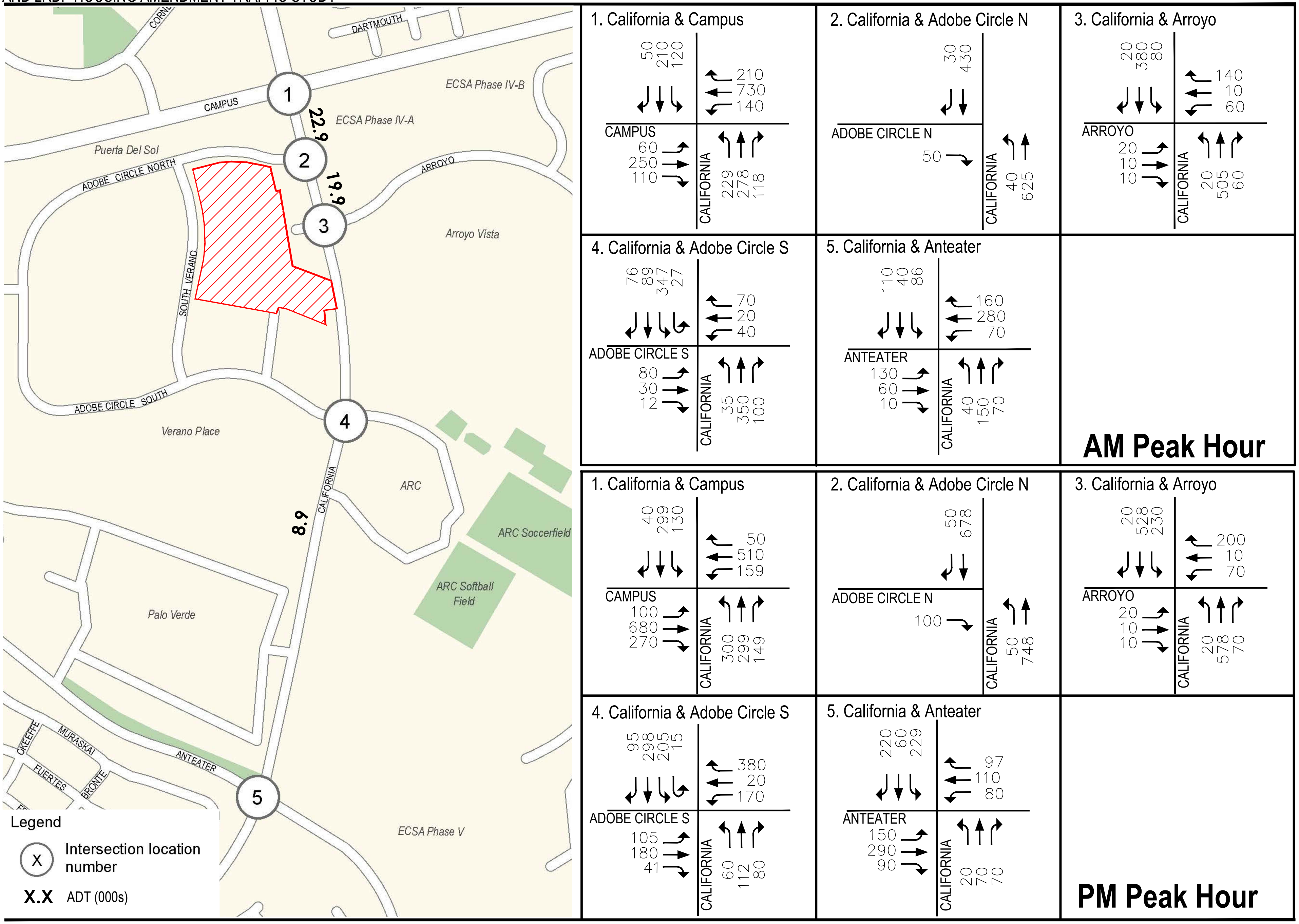


Figure 3-3

LRDP Buildout With Project ADT and Peak Hour Intersection Volumes

Table 3-2 LRDP Buildout Conditions Intersection LOS Summary

Description	Juris-diction	LRDP Buildout No Project				LRDP Buildout With Project			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		ICU/ Delay	LOS	ICU/ Delay	LOS	ICU/ Delay	LOS	ICU/ Delay	LOS
ICU Methodology - Signalized Intersections									
1. California & Campus	Irvine	0.56	A	0.70	B	0.55	A	0.70	B
3. California & Arroyo	UCI	0.51	A	0.67	B	0.50	A	0.66	A
4. California & Adobe Circle S	UCI	0.52	A	0.66	A	0.51	A	0.66	A
HCM Methodology - Stop-Controlled Intersections									
2. California & Adobe Circle N	UCI	10.3	B	12.3	B	10.2	B	12.3	B
5. California & Anteater	UCI	16.6	C	23.0	C	16.6	C	22.9	C
For stop-controlled intersections, delay is shown in seconds									

3.3 VERANO 8 IMPACT SUMMARY

The proposed Verano 8 graduate student housing project consists of approximately 1,200 beds, a community center, a replacement maintenance and operation facility, and a 1,000-space parking structure. Verano 8 would generate approximately 1,900 daily trips, 100 trips during the AM peak hour, and 130 trips during the PM peak hour. Verano 8 would have a less than significant impact on the study area intersections under Existing plus Project conditions.

With Verano 8, the UCI campus remains under the total number of beds specific in the current LRDP. Therefore, the project is consistent with the overall LRDP student bed count. The study intersections would operate at acceptable LOS C or better with Verano 8. Therefore, the proposed project would have a less than significant impact on the circulation system in the long-range setting.

In conclusion, the project has a less than significant impact on the surrounding circulation system under existing or long-range conditions; therefore, no mitigation is necessary.

4.0 LRDP HOUSING AMENDMENT PROJECT DESCRIPTION

The 2007 LRDP identified general types of campus development to support future campus growth. Of those general types is Student Housing. UCI proposes to amend the current LRDP to increase the on-campus student housing capacity. This Chapter discusses the proposed increase that would amend the 2007 LRDP.

4.1 HOUSING AMENDMENT PROJECT DESCRIPTION

The proposed housing amendment would do the following:

- Increase total capacity for student housing from 17,637 beds to 22,350 beds
- Add the “Student Housing” land use designation to TAZ 6, which is currently designated for Academic/Support uses

The current LRDP designates student housing growth for up to 17,637 beds. The proposed amendment would increase the capacity to 22,350 beds. This would increase on-campus student housing from 50 percent to 60 percent of student enrollment. The additional student housing would be located in what the LRDP identifies as the “Academic Core” and “Outer Campus”. At this time, UCI staff has identified potential locations where future student would be constructed. These locations include: Campus Village, Verano Place, and East Campus. Campus Village and Verano Place (1-3) would be redeveloped with higher density and East Campus Phase V location is currently vacant.

The proposed changes in land use designations primarily affect two TAZ zones in the LRDP. TAZ 6 is a six-acre parcel in the Academic Core, where the existing Campus Village housing is located. TAZ 51 is an undeveloped 12-acre parcel in the West Campus (See **Figure 4-1** for location map).

TAZ 6 is currently designated for Academic and Support uses, however, there is an existing 685-bed Campus Village that would be demolished under the current LRDP. Under the housing amendment Campus Village would be redeveloped at a higher density (approximately 847-bed). In order to redevelop Campus Village, the current LRDP would need to be amended so that TAZ 6 is designated for Academic/Support and Student Housing uses.

TAZ 50 would be changed from its current Student Housing designation to Academic and Support. Higher building densities across the campus would accommodate the LRDP’s bed capacity and the site is no longer needed for student housing.

Figure 4-1
Traffic Analysis Zones Affected by Housing Amendment

4.2 HOUSING AMENDMENT TRIP GENERATION

As previously mentioned, the current LRDP designated growth for up to 17,637 Beds. The proposed Housing Amendment would increase the total capacity to 22,350 Beds, an increase of 4,713 beds. UCI staff is considering a mix of undergraduate and graduate housing. Trip generation estimates have been prepared for and are shown in **Table 4-2**. The trip generation rates applied in the trip generation estimates are taken from the UCI MCTM (a trip rate derivation worksheet is located in **Appendix D**).

The trip generation summaries also include trip generation estimates based on socioeconomic trip generation rates that are applied in the City of Irvine's ITAM 15 traffic model. **Table 4-2** summarizes the trip generation estimates for the proposed increase in student housing per the Housing Amendment.

Table 4-3 Housing Amendment Trip Generation Summary

				AM Peak Hour			PM Peak Hour			ADT
TAZ	Code and Description	Unit	Amount	In	Out	Total	In	Out	Total	
UCI MCTM Trip Generation										
6 & 59/61	10. Undergraduate housing[2]	BED	3260	14	147	161	127	78	205	2771
6 & 62	11. Graduate housing[1,3]	BED	1453	11	116	127	100	61	161	2180
Total			4713	25	263	288	227	139	366	4951
UCI MCTM Trip Rates										
10. Undergraduate Housing		BED		0.004	0.045	0.049	0.039	0.024	0.063	0.850
11. Graduate Housing		BED		0.008	0.080	0.087	0.069	0.042	0.111	1.500
ITAM Trip Generation – Socioeconomic Based*										
567, 571 & 573	108. Dorm	BED	4713	42	392	434	246	115	361	3868

[1] Note that the actual amount considered by UCI staff is 1,556-beds, however 103 of those are covered under the current LRDP. The amount shown above is 1,556 beds minus 103 beds.
[2] Includes Campus Village and East Student Campus Apartments Phase V
[3] Includes Campus Village and Verano 1, 2, and 3 Redevelopment
* Socioeconomic-base trip generation is taken from the ITAM 15 model

4.3 HOUSING AMENDMENT TRIP DISTRIBUTION

For the purposes of analyzing the potential off-site traffic impacts, trip distribution patterns for the project were developed using the Buildout Approved ITAM network. A select zone run was conducted to identify the distribution of the trips generated by the proposed Housing Amendment. AM and PM peak hour project trip distribution patterns based on the buildout with-project ITAM 15 model run are presented here. **Figure 4-2** illustrates the ITAM buildout trip distribution pattern for the project during the AM peak hour and **Figure 4-3** illustrates the ITAM buildout trip distribution pattern for the project during the PM peak

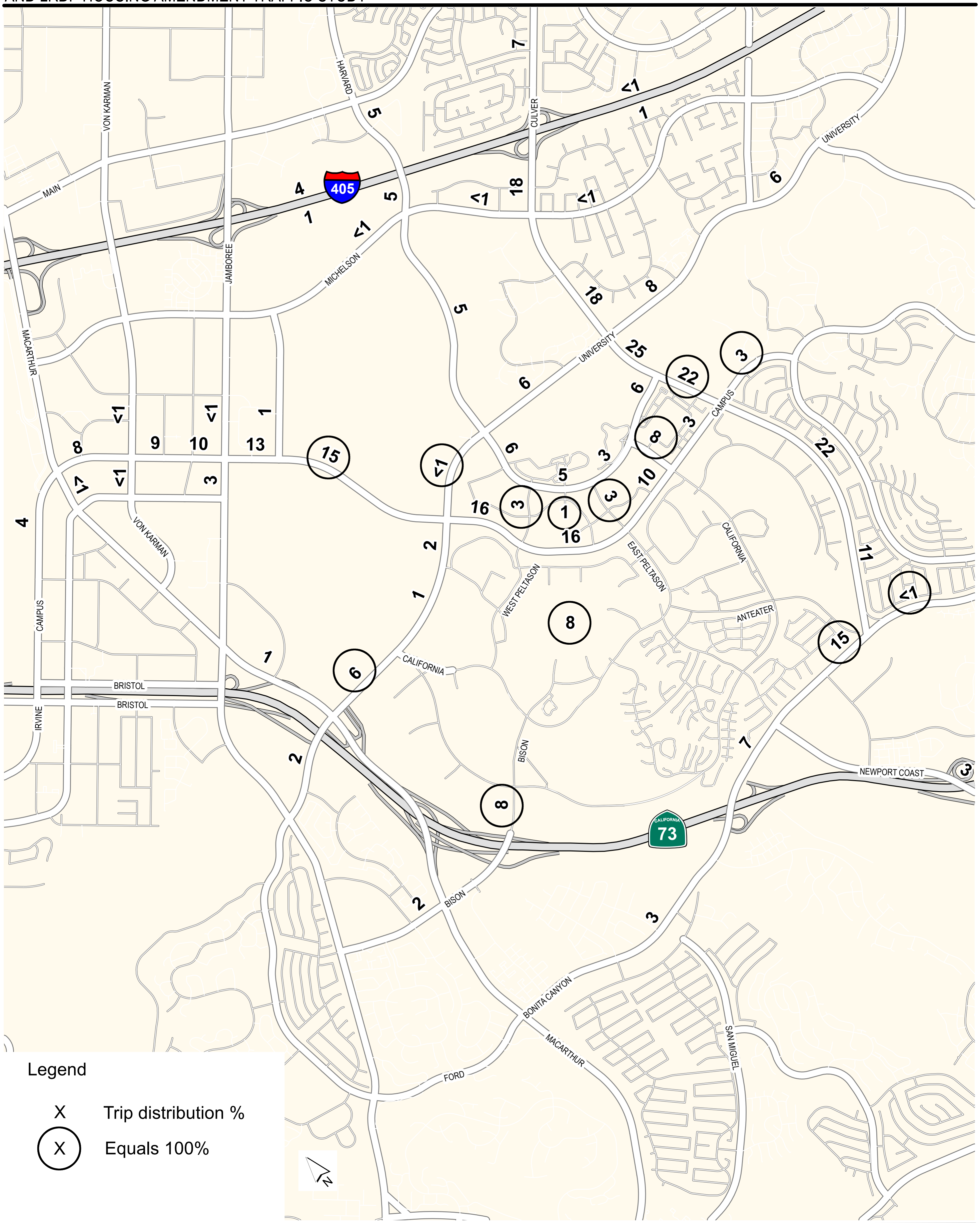


Figure 4-2
Housing Amendment AM Peak Hour Trip Distribution

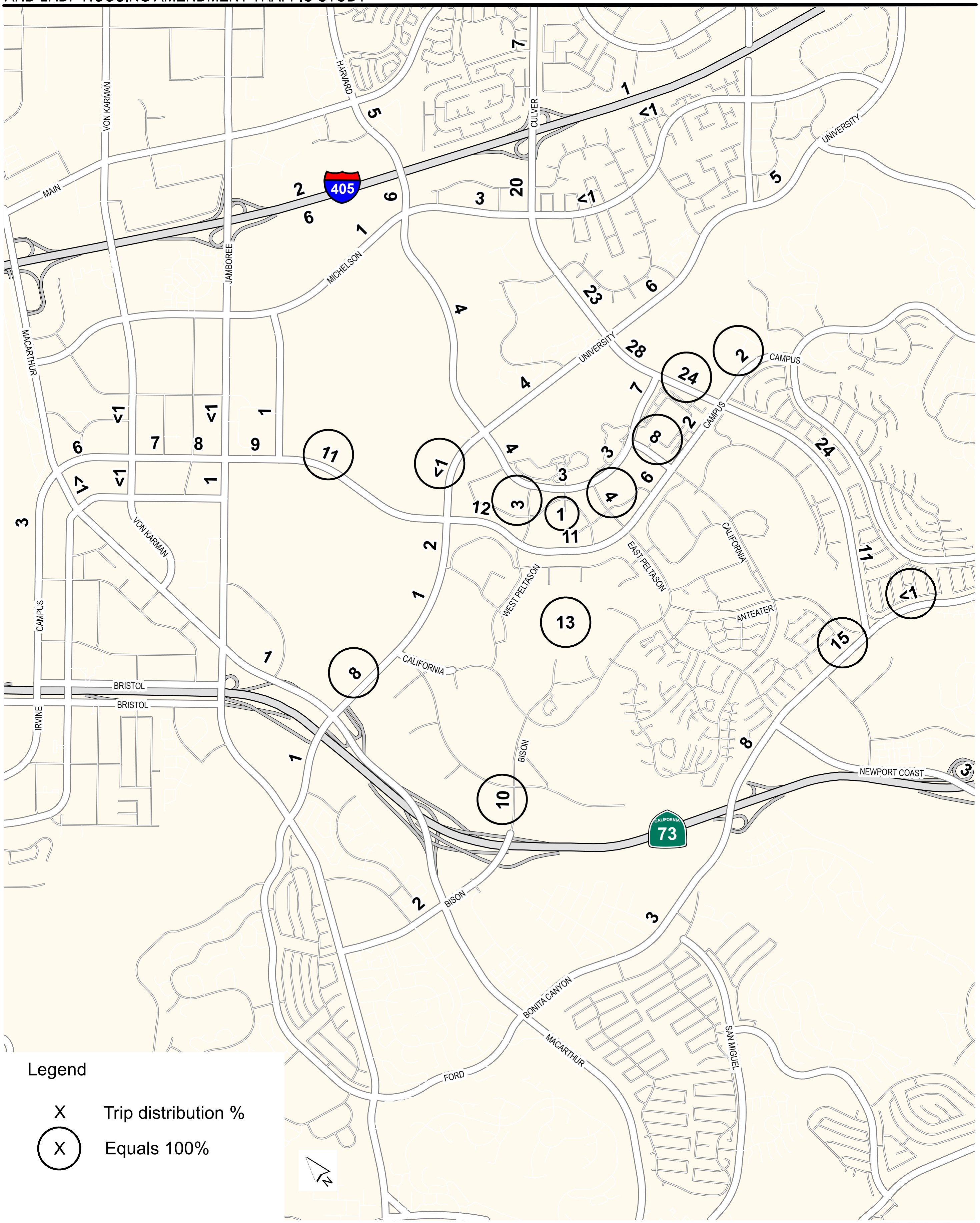


Figure 4-3
Housing Amendment PM Peak Hour Trip Distribution

hour. These buildout trip distribution patterns for the AM and PM peak hour were utilized to determine the focused study area for this study.

4.4 HOUSING AMENDMENT STUDY AREA

By increasing the student housing capacity, traffic volumes would be reduced overall due to more student living on campus and fewer commuters. The traffic study area therefore accounts for the change in travel patterns resulting from having more students living on campus.

As previously described above, a select zone run was conducted to identify the distribution of the trips generated by the increase in student housing. A focused study area was identified from the select zone run. The study area from the original 2007 LRDP Traffic Study was used and focused to where the proposed Housing Amendment adds 34 peak hour trips to the intersection (1,700 vehicles/per/lane saturation flow rate multiplied by 2 percent from the performance impact criteria). For the AM peak hour, this translates to a threshold of 7.8 percent project trip distribution (34/434) and 9.6 percent in the PM peak hour (34/351). These thresholds apply to the City of Irvine intersections.

For intersections in the City of Newport Beach, the focused study area includes intersections where the proposed Housing Amendment adds 16 peak hour trips to the intersection (1,600 vehicles/per/lane saturation flow rate multiplied by 1 percent from the performance impact criteria). For the AM peak hour, this translates to a threshold of 3.7 percent project trip distribution (16 trips/429 total AM peak hour trips) and 4.4 percent in the PM peak hour (16 trips/361 total PM peak hour trips). The focused study area intersections are shown in **Figure 4-4** and the link locations are shown in **Figure 4-5.**

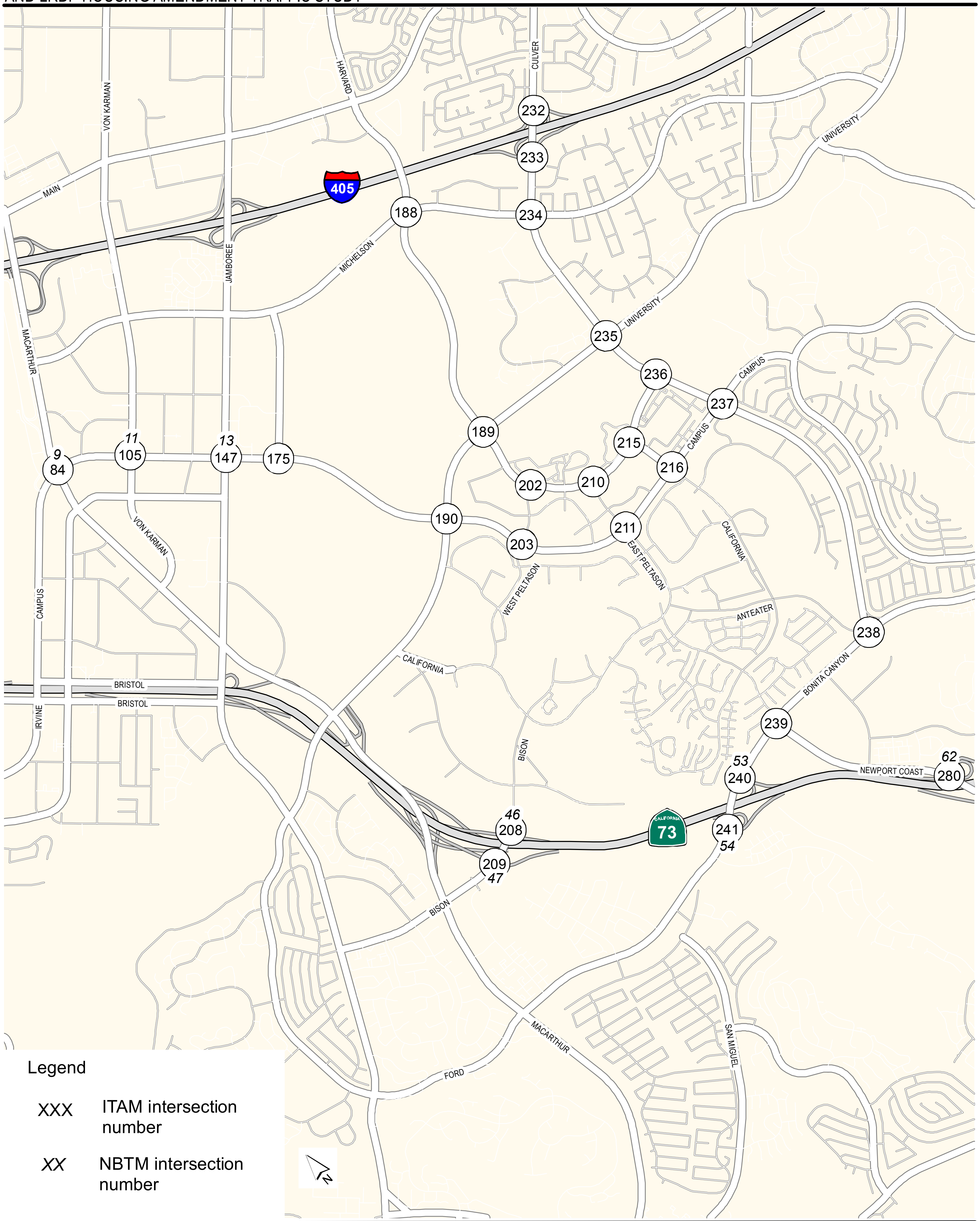


Figure 4-4
Housing Amendment Study Area Intersections

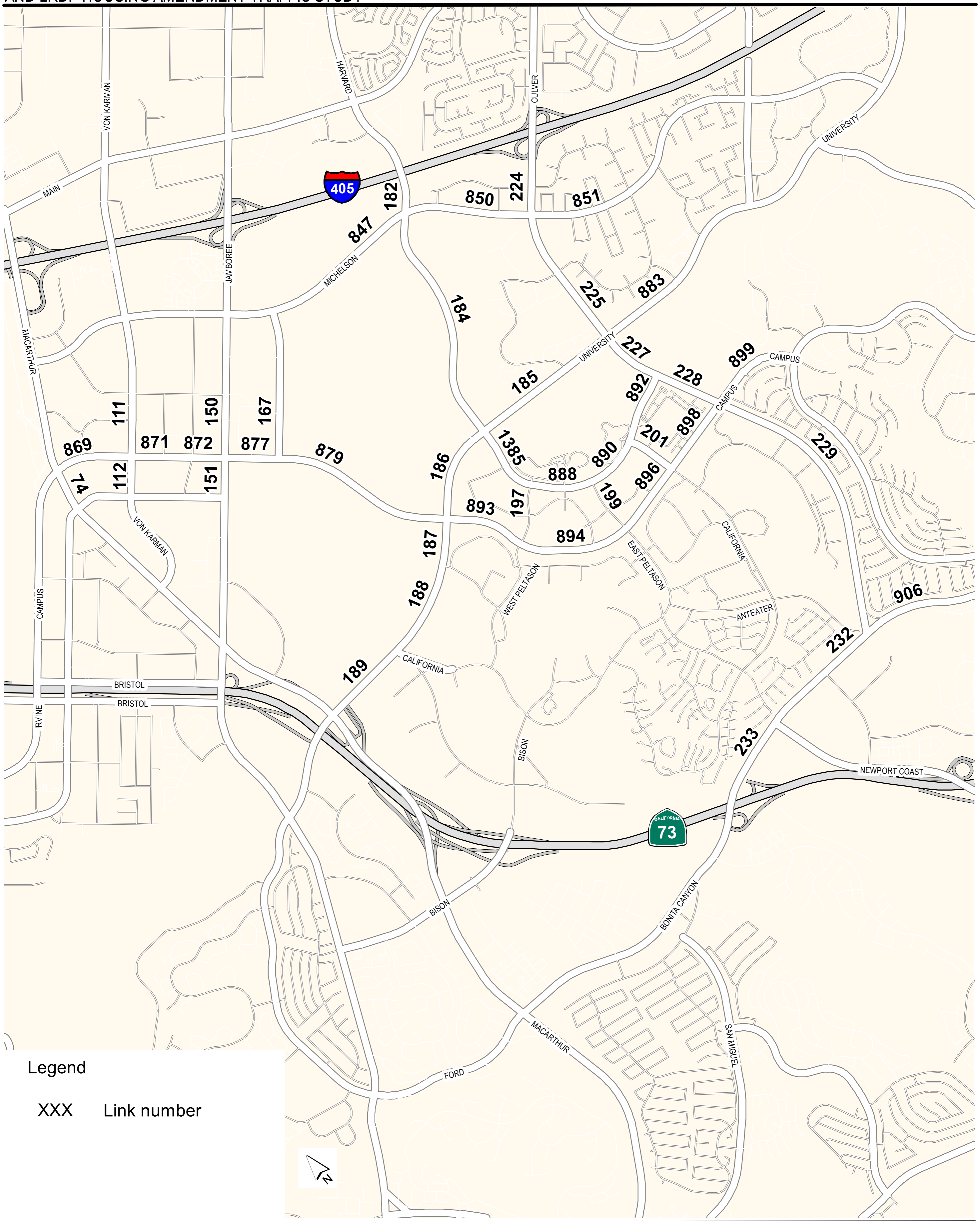


Figure 4-5
Housing Amendment Study Area Link Locations

5.0 LRDP HOUSING AMENDMENT IMPACT ANALYSIS

To evaluate potential traffic related impacts that the proposed housing amendment would have on the surround roadway system, an impact analysis was conducted using the previously described performance criteria.

5.1 ARTERIAL ROADWAY IMPACT ANALYSIS

Per the City of Irvine requirements, an arterial V/C analysis was conducted. ADT volumes for Long-Range Interim Year Approved No Project conditions and Long-Range Interim Year Approved With Project conditions are shown in **Figure 5-1** and **Figure 5-2**, respectively. The corresponding V/C ratios are illustrated in **Figure 5-3** for Long-Range Interim Year Approved No Project conditions and **Figure 5-5** for Long-Range Interim Year Approved With Project conditions. The V/C analysis is summarized in **Table 5-1.**

ADT volumes for Buildout Approved No Project conditions and Buildout Approved With Project conditions are shown in **Figure 5-4** and **Figure 5-5**, respectively. The corresponding V/C ratios are illustrated in **Figure 5-6** for Buildout Approved No Project conditions and **Figure 5-7** for Buildout Approved With Project conditions. The V/C analysis is summarized in **Table 5-2.**

The V/C analysis under the Long-Range Interim Year Approved conditions and Buildout Approved conditions show that the proposed Housing Amendment would not cause a significant impact based on the City's performance criteria.

5.2 INTERSECTION IMPACT ANALYSIS

An intersection impact analysis was conducted using the City of Irvine performance criteria and City of Newport Beach performance criteria.

The results of the ICU analysis are summarized in **Table 5-3** for City of Irvine intersections under the Long-Range Interim Year Approved conditions and **Table 5-4** under the Buildout Approved conditions. As shown in the LOS summary, there are several intersections that exceed the LOS D threshold. However, the increment change between with project conditions and no project conditions does not exceed the 0.02 threshold. Also, the project does not cause a new deficiencies. Therefore, the proposed Housing Amendment would not cause a significant impact based on the City's performance criteria.

For intersections located in Newport Beach, the resulting ICU and LOS are summarized in **Table 5-5**. As shown in the LOS summary, the increment of change between the with project conditions and no project conditions does not exceed the 0.010 threshold. Therefore, the proposed Housing Amendment would not cause a significant impact based on the City's performance criteria.

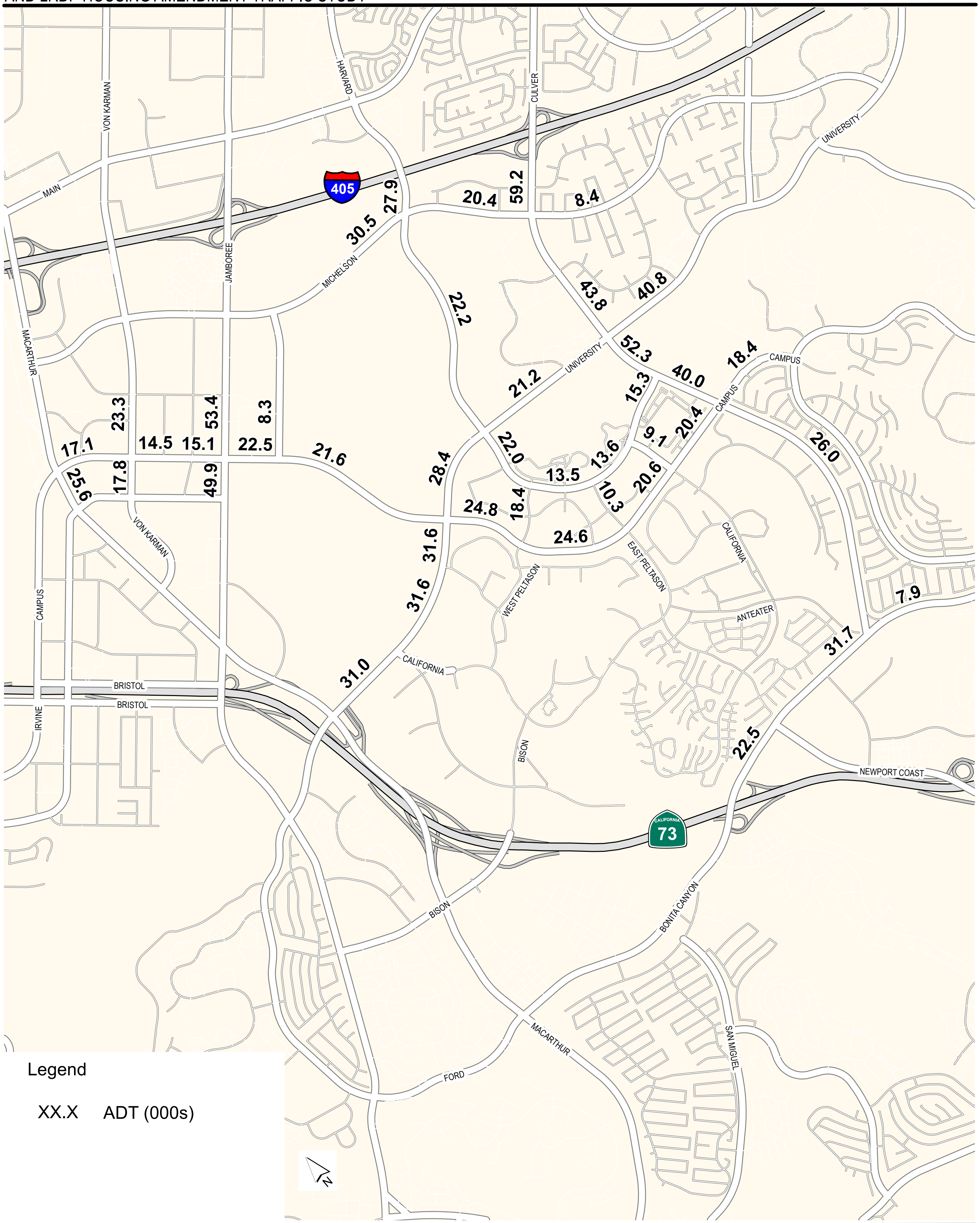


Figure 5-1
Long-Range Interim Year Approved No Project ADT Volumes

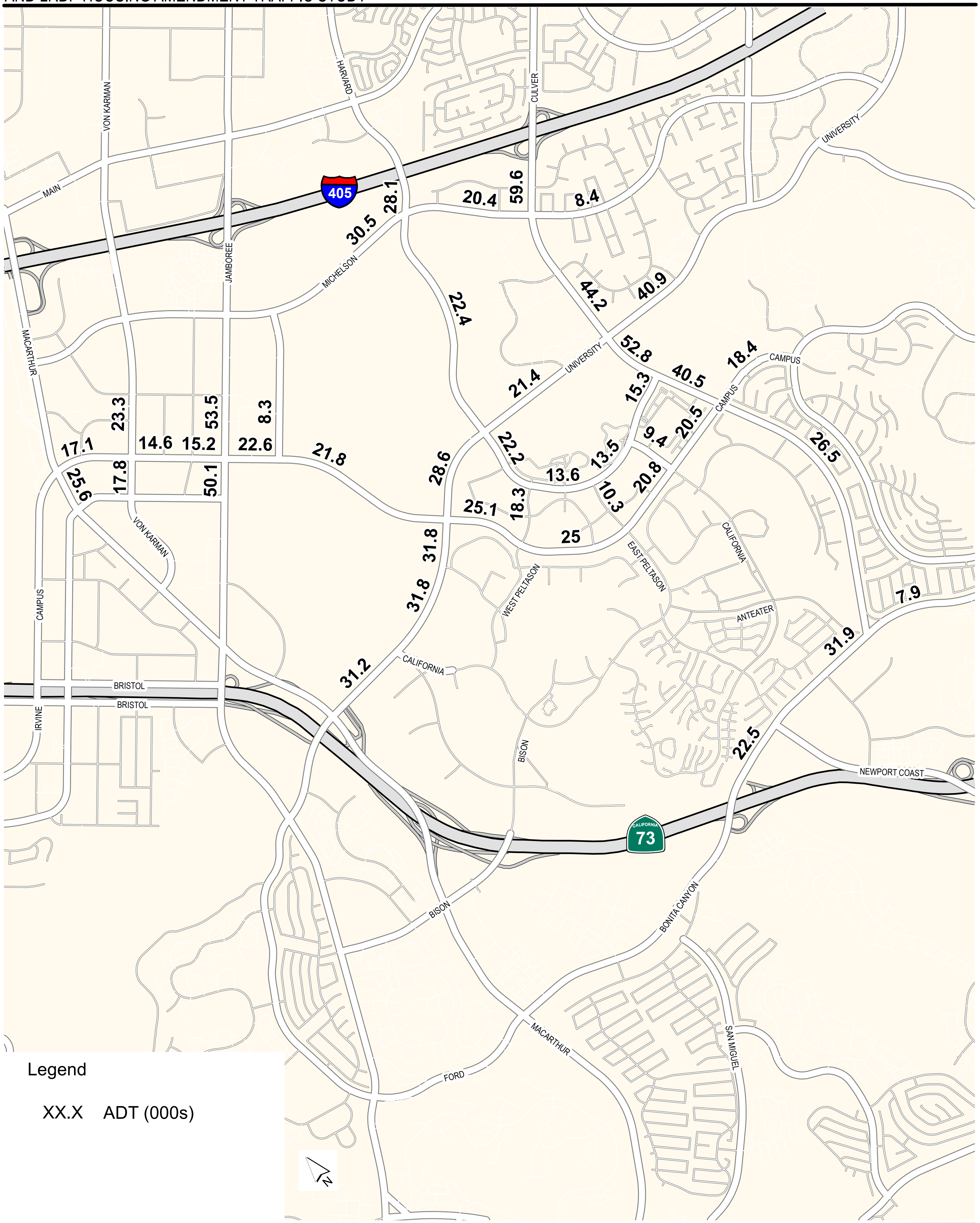


Figure 5-2

Long-Range Interim Year Approved With Project ADT Volumes

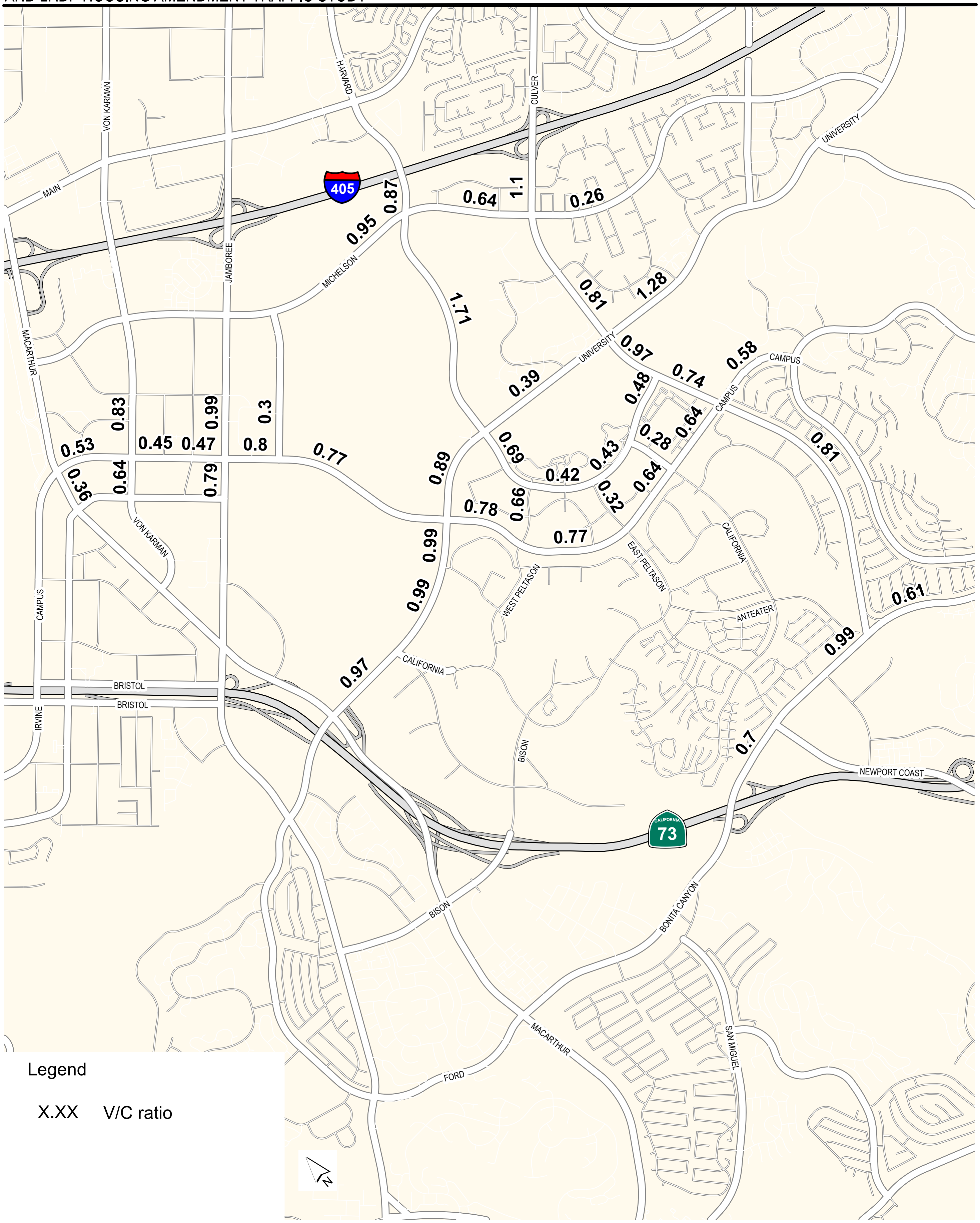


Figure 5-3
Long-Range Interim Year Approved No Project V/C Ratios

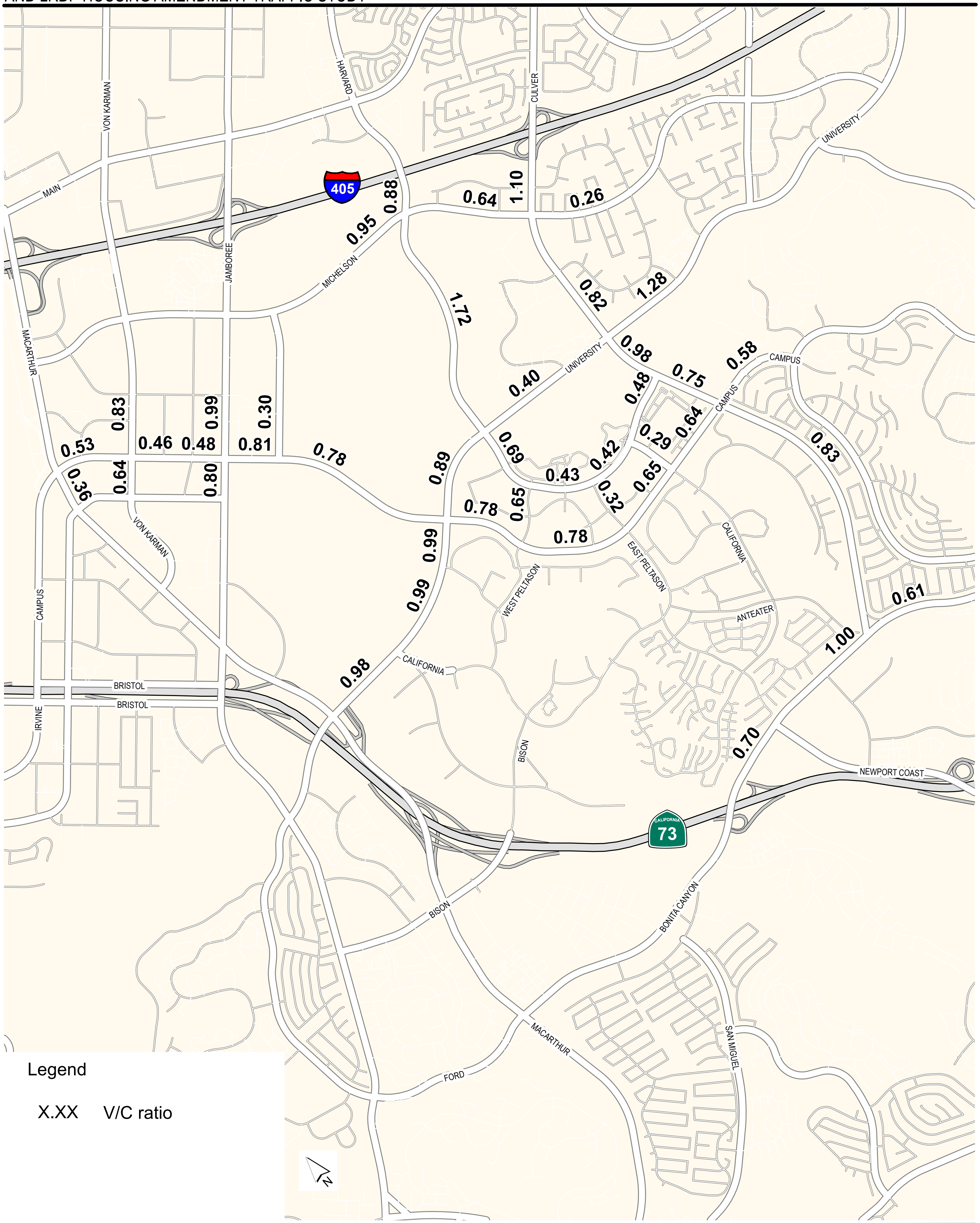


Figure 5-4
Long-Range Interim Year Approved With Project V/C Ratios

Table 5-1 Arterial Roadway V/C Summary – Long Range Interim Year Approved

Link Location Number	Roadway	Segment	Lanes	Capacity	LRIY No Project (LRDP) ADT Volumes (000s)	LRIY No Project (LRDP) V/C Ratio	LRIY With Project (Housing Amendment) ADT Volumes (000s)	LRIY With Project (Housing Amendment) V/C Ratio
74	MacArthur Bl.	n/o Birch St.	8M	72000	25.6	.36	25.6	.36
111	Von Karman Av.	n/o Campus Dr.	4S	28000	23.3	.83	23.3	.83
112	Von Karman Av.	s/o Campus Dr.	4S	28000	17.8	.64	17.8	.64
150	Jamboree Rd.	b/w Dupont and Campus Dr.	6M	54000	53.4	.99	53.5	.99
151	Jamboree Rd.	b/w Campus Dr.and Birch St.	7M	63000	49.9	.79	50.1	.80
167	Carlson Av.	n/o Campus Dr.	4S	28000	8.3	.30	8.3	.30
182	Harvard Av.	s/o Coronado	4P	32000	27.9	.87	28.1	.88
184	Harvard Av.	n/o University Dr.	2C	13000	22.2	1.71	22.4	1.72
185	Harvard Av.	s/o University Dr.	6M	54000	21.2	.39	21.4	.40
186	University Dr.	n/o Campus Dr.	4P	32000	28.4	.89	28.6	.89
187	University Dr.	b/w Campus Dr.and Mesa Rd.	4P	32000	31.6	.99	31.8	.99
188	University Dr.	b/w Mesa Rd. and California Av.	4P	32000	31.6	.99	31.8	.99
189	University Dr.	b/w MacArthur Blvd. NB and California Av.	4P	32000	31	.97	31.2	.98
197	Bridge Rd.	n/o Campus Dr.	4S	28000	18.4	.66	18.3	.65
199	Berkeley Av.	n/o Campus Dr.	4P	32000	10.3	.32	10.3	.32
201	California Av.	n/o Campus Dr.	4P	32000	9.1	.28	9.4	.29
224	Culver Dr.	n/o Michelson Dr.	6M	54000	59.2	1.10	59.6	1.10
225	Culver Dr.	s/o Michelson Dr.	6M	54000	43.8	.81	44.2	.82
227	Culver Dr.	b/w University Dr. and Harvard Av.	6M	54000	52.3	.97	52.8	.98
228	Culver Dr.	s/o Harvard Av.	6M	54000	40	.74	40.5	.75
229	Culver Dr.	s/o Campus Dr.	4P	32000	26	.81	26.5	.83
232	Culver Dr.	s/o Anteater	4P	32000	31.7	.99	31.9	1.00
233	Bonita Cyn. Rd.	s/o Newport Coast Dr.	4P	32000	22.5	.70	22.5	.70
847	Michelson Dr.	e/o Carlson Av.	4P	32000	30.5	.95	30.5	.95
850	Michelson Dr.	w/o Culver Dr.	4P	32000	20.4	.64	20.4	.64
851	Michelson Dr.	e/o Culver Dr.	4P	32000	8.4	.26	8.4	.26
869	Campus Dr.	e/o MacArthur Bl.	4P	32000	17.1	.53	17.1	.53
871	Campus Dr.	e/o Von Karman Av.	4P	32000	14.5	.45	14.6	.46
872	Campus Dr.	w/o Jamboree Rd.	4P	32000	15.1	.47	15.2	.48
877	Campus Dr.	e/o Jamboree Rd.	4S	28000	22.5	.80	22.6	.81

(Cont.)

Table 5-1 Arterial Roadway V/C Summary – Long Range Interim Year Approved (Continued)

Link Location Number	Roadway	Segment	Lanes	Capacity	LRIY No Project (LRDP) ADT Volumes (000s)	LRIY No Project (LRDP) V/C Ratio	LRIY With Project (HA) ADT Volumes (000s)	LRIY With Project (HA) V/C Ratio
879	Campus Dr.	b/w Carlson Av.and University Dr.	4S	28000	21.6	.77	21.8	.78
883	University Dr.	e/o Culver Dr.	4P	32000	40.8	1.28	40.9	1.28
888	Harvard Av.	e/o Bridge Rd.	4P	32000	13.5	.42	13.6	.43
890	Harvard Av.	b/w Berkeley Av.and California Av.	4P	32000	13.6	.43	13.5	.42
892	Harvard Av.	w/o Culver Dr.	4P	32000	15.3	.48	15.3	.48
893	Campus Dr.	b/w University Dr. and Bridge Rd.	4P	32000	24.8	.78	25.1	.78
894	Campus Dr.	e/o Bridge Rd.	4P	32000	24.6	.77	25	.78
896	Campus Dr.	e/o Berkeley Av.	4P	32000	20.6	.64	20.8	.65
898	Campus Dr.	b/w California and Culver	4P	32000	20.4	.64	20.5	.64
899	Campus Dr.	e/o Culver Dr.	4P	32000	18.4	.58	18.4	.58
906	Anteater Dr.-Shady Canyon Dr.	e/o Culver Dr.	2C	13000	7.9	.61	7.9	.61
1385	Harvard Av.	w/o Bridge Rd.	4P	32000	22	.69	22.2	.69
LRIYA – Long-Range Interim Year Approved; LRDP = Long Range Development Plan; ADT = average daily traffic; V/C = volume/capacity; M = major; S = secondary; P = primary; C = collector;								

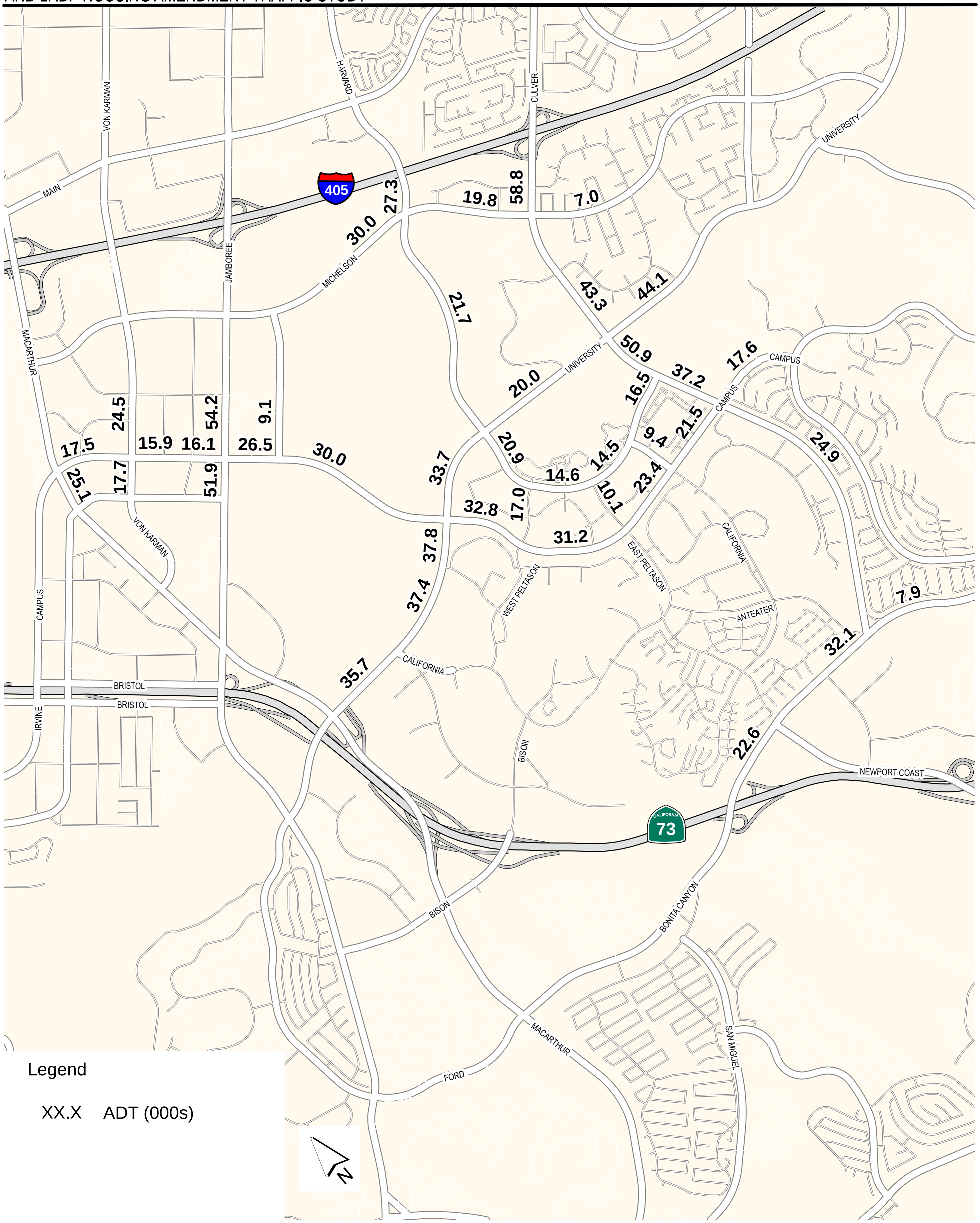


Figure 5-5
Buildout Approved No Project ADT Volumes

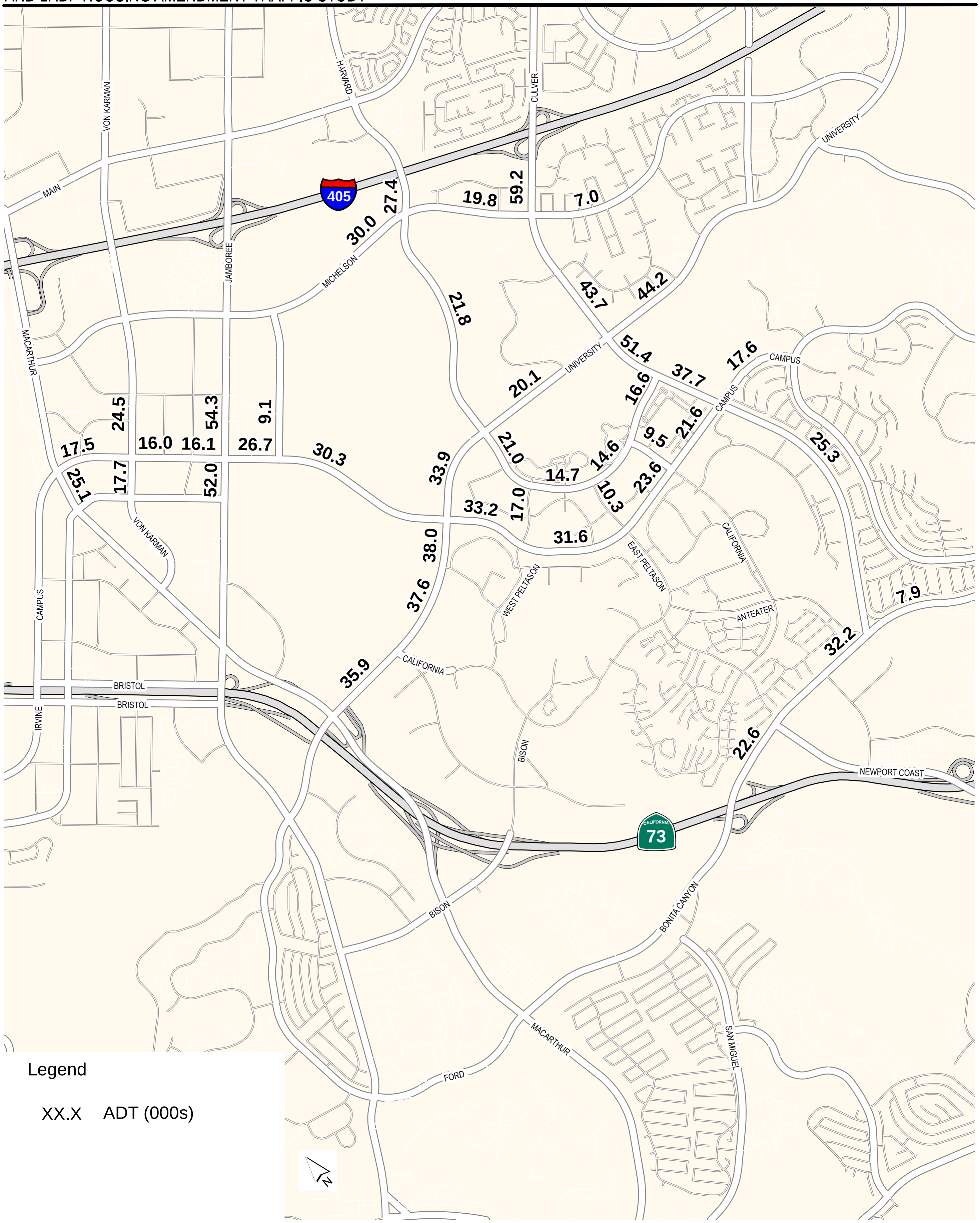


Figure 5-6
Buildout Approved With Project ADT Volumes

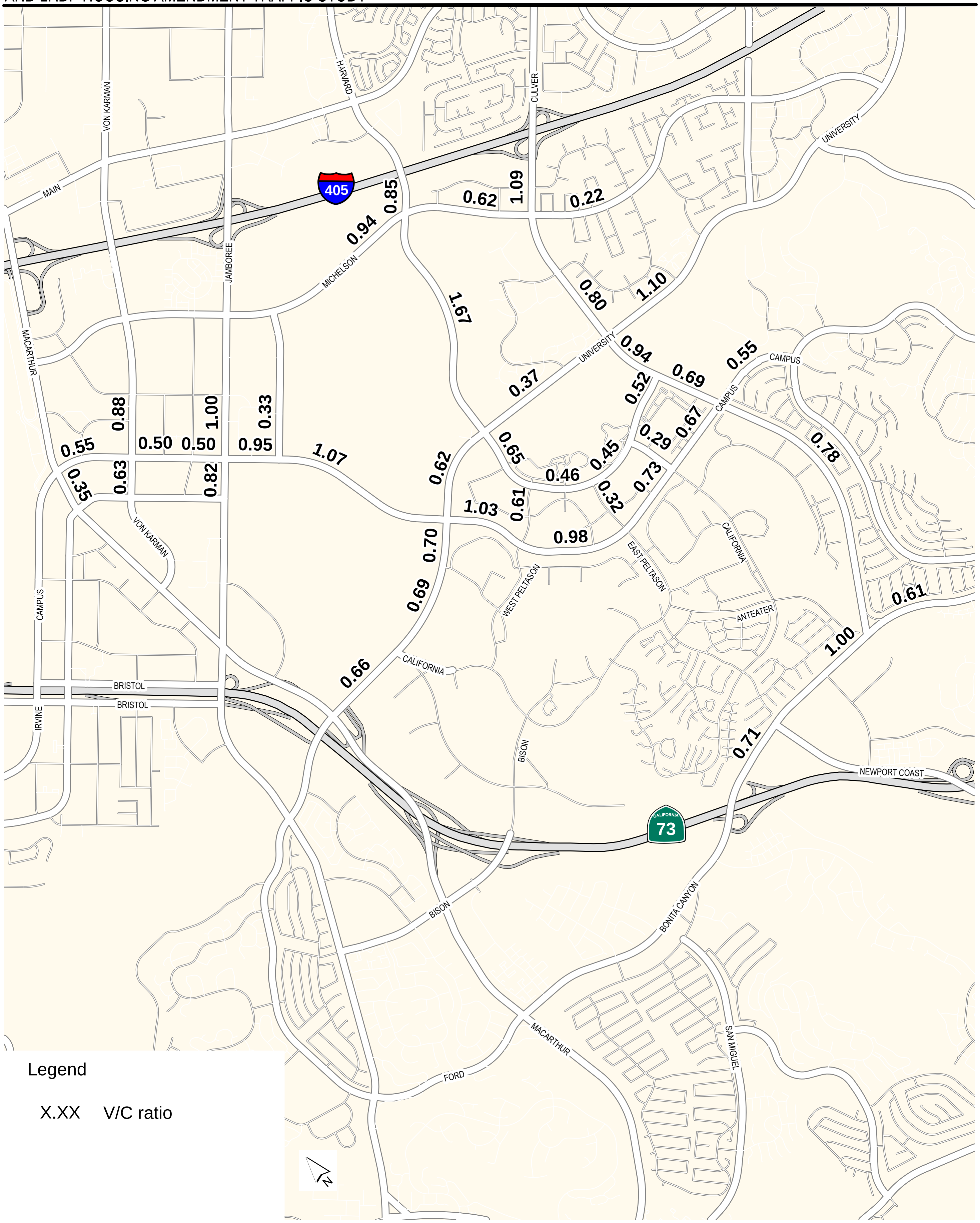


Figure 5-7
Buildout Approved No Project V/C Ratios

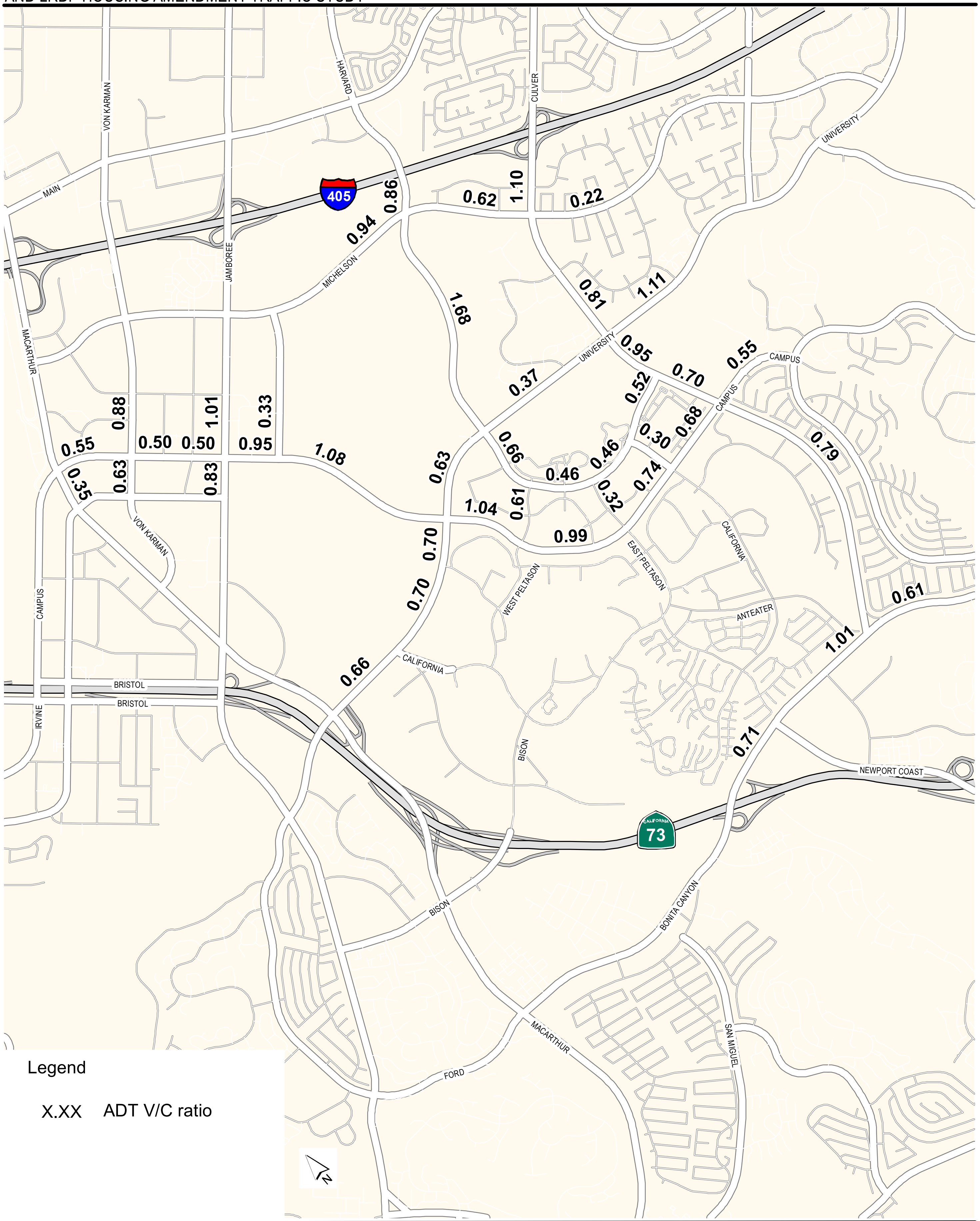


Figure 5-8
Buildout Approved With Project V/C Ratios

Table 5-2 Arterial Roadway V/C Summary – Buildout Approved

Link Location Number	Roadway	Segment	Lanes	Capacity	Buildout No Project (LRDP) ADT Volumes (000s)	Buildout No Project (LRDP) V/C Ratio	Buildout With Project (HA) ADT Volumes (000s)	Buildout With Project (HA) V/C Ratio
74	MacArthur Bl.	n/o Birch St.	8M	72000	25.1	.35	25.1	.35
111	Von Karman Av.	n/o Campus Dr.	4S	28000	24.5	.88	24.5	.88
112	Von Karman Av.	s/o Campus Dr.	4S	28000	17.7	.63	17.7	.63
150	Jamboree Rd.	b/w Dupont and Campus Dr.	6M	54000	54.2	1.00	54.3	1.01
151	Jamboree Rd.	b/w Campus Dr.and Birch St.	7M	63000	51.9	.82	52.0	.83
167	Carlson Av.	n/o Campus Dr.	4S	28000	9.1	.33	9.1	.33
182	Harvard Av.	s/o Coronado	4P	32000	27.3	.85	27.4	.86
184	Harvard Av.	n/o University Dr.	2C	13000	21.7	1.67	21.8	1.68
185	Harvard Av.	s/o University Dr.	6M	54000	20.0	.37	20.1	.37
186	University Dr.	n/o Campus Dr.	6M	54000	33.7	.62	33.9	.63
187	University Dr.	b/w Campus Dr.and Mesa Rd.	6M	54000	37.8	.70	38.0	.70
188	University Dr.	b/w Mesa Rd. and California Av.	6M	54000	37.4	.69	37.6	.70
189	University Dr.	b/w MacArthur Blvd. NB and California Av.	6M	54000	35.7	.66	35.9	.66
197	Bridge Rd.	n/o Campus Dr.	4S	28000	17.0	.61	17.0	.61
199	Berkeley Av.	n/o Campus Dr.	4P	32000	10.1	.32	10.3	.32
201	California Av.	n/o Campus Dr.	4P	32000	9.4	.29	9.5	.30
224	Culver Dr.	n/o Michelson Dr.	6M	54000	58.8	1.09	59.2	1.10
225	Culver Dr.	s/o Michelson Dr.	6M	54000	43.3	.80	43.7	.81
227	Culver Dr.	b/w University Dr. and Harvard Av.	6M	54000	50.9	.94	51.4	.95
228	Culver Dr.	s/o Harvard Av.	6M	54000	37.2	.69	37.7	.70
229	Culver Dr.	s/o Campus Dr.	4P	32000	24.9	.78	25.3	.79
232	Culver Dr.	s/o Anteater	4P	32000	32.1	1.00	32.2	1.01
233	Bonita Cyn. Rd.	s/o Newport Coast Dr.	4P	32000	22.6	.71	22.6	.71
847	Michelson Dr.	e/o Carlson Av.	4P	32000	30.0	.94	30.0	.94
850	Michelson Dr.	w/o Culver Dr.	4P	32000	19.8	.62	19.8	.62
851	Michelson Dr.	e/o Culver Dr.	4P	32000	7.0	.22	7.0	.22
869	Campus Dr.	e/o MacArthur Bl.	4P	32000	17.5	.55	17.5	.55
871	Campus Dr.	e/o Von Karman Av.	4P	32000	15.9	.50	16.0	.50
872	Campus Dr.	w/o Jamboree Rd.	4P	32000	16.1	.50	16.1	.50
877	Campus Dr.	e/o Jamboree Rd.	4S	28000	26.5	.95	26.7	.95

Table 5-2 Arterial Roadway V/C Summary – Buildout Approved (Continued)

Link Location Number	Roadway	Segment	Lanes	Capacity	Buildout No Project (LRDP) ADT Volumes (000s)	Buildout No Project (LRDP) V/C Ratio	Buildout With Project (Housing Amendment) ADT Volumes (000s)	Buildout With Project (Housing Amendment) V/C Ratio
879	Campus Dr.	b/w Carlson Av.and University Dr.	4S	28000	30.0	1.07	30.3	1.08
883	University Dr.	e/o Culver Dr.	4P	40000	44.1	1.10	44.2	1.11
888	Harvard Av.	e/o Bridge Rd.	4P	32000	14.6	.46	14.7	.46
890	Harvard Av.	b/w Berkeley Av.and California Av.	4P	32000	14.5	.45	14.6	.46
892	Harvard Av.	w/o Culver Dr.	4P	32000	16.5	.52	16.6	.52
893	Campus Dr.	b/w University Dr. and Bridge Rd.	4P	32000	32.8	1.03	33.2	1.04
894	Campus Dr.	e/o Bridge Rd.	4P	32000	31.2	.98	31.6	.99
896	Campus Dr.	e/o Berkeley Av.	4P	32000	23.4	.73	23.6	.74
898	Campus Dr.	b/w California and Culver	4P	32000	21.5	.67	21.6	.68
899	Campus Dr.	e/o Culver Dr.	4P	32000	17.6	.55	17.6	.55
906	Anteater Dr.-Shady Canyon Dr.	e/o Culver Dr.	2C	13000	7.9	.61	7.9	.61
1385	Harvard Av.	w/o Bridge Rd.	4P	32000	20.9	.65	21	.66
LRDP = Long Range Development Plan; ADT = average daily traffic; V/C = volume/capacity; M = major; S = secondary; P = primary; C = collector;								

Table 5-3 ICU & LOS Summary – Long Range Interim Year Approved

Description	Long-Range Interim Year No Project				Long-Range Interim Year With Project				Difference		Significant Impact?	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM	AM	PM
84. MacArthur & Campus	0.76	C	1.02	F	0.77	C	1.01	F	0.01	-0.01	N	N
100. Von Karman & Main	0.77	C	0.86	D	0.77	C	0.86	D	0.00	0.00	N	N
105. Von Karman & Campus	0.76	C	0.89	D	0.76	C	0.89	D	0.00	0.00	N	N
143. Jamboree & I-405 NB Ramps	0.86	D	0.93	E	0.86	D	0.93	E	0.00	0.00	N	N
144. Jamboree & I-405 SB Ramps	1.13	F	1.04	F	1.13	F	1.04	F	0.00	0.00	N	N
145. Jamboree & Michelson	0.89	D	1.06	F	0.90	D	1.06	F	0.01	0.00	N	N
146. Jamboree & Dupont	0.64	B	0.78	C	0.65	B	0.77	C	0.01	-0.01	N	N
147. Jamboree & Campus	0.79	C	0.83	D	0.79	C	0.85	D	0.00	0.02	N	N
148. Jamboree & Birch	0.64	B	0.62	B	0.63	B	0.62	B	-0.01	0.00	N	N
149. Jamboree & Fairchild	0.61	B	0.77	C	0.61	B	0.76	C	0.00	-0.01	N	N
150. Jamboree & MacArthur	0.86	D	0.87	D	0.86	D	0.87	D	0.00	0.00	N	N
174. Carlson & Michelson	0.70	B	0.80	C	0.70	B	0.79	C	0.00	-0.01	N	N
175. Carlson Av & Campus	0.52	A	0.80	C	0.53	A	0.82	D	0.01	0.02	N	N
176. Fairchild & MacArthur	0.84	D	0.91	E	0.85	D	0.91	E	0.01	0.00	N	N
188. Harvard & Michelson	0.72	C	0.94	E	0.73	C	0.95	E	0.01	0.01	N	N
189. Harvard & University	0.75	C	0.80	C	0.75	C	0.81	D	0.00	0.01	N	N
190. University & Campus	0.76	C	0.88	D	0.77	C	0.87	D	0.01	-0.01	N	N
191. Mesa & University	0.61	B	0.65	B	0.61	B	0.65	B	0.00	0.00	N	N
192. California & University	0.95	E	0.85	D	0.96	E	0.85	D	0.01	0.00	N	N
193. MacArthur NB & University	0.59	A	0.69	B	0.59	A	0.71	C	0.00	0.02	N	N
194. MacArthur SB & University	0.64	B	0.54	A	0.64	B	0.55	A	0.00	0.01	N	N
202. Bridge & Harvard	0.66	B	0.63	B	0.66	B	0.65	B	0.00	0.02	N	N
203. Bridge & Campus	0.91	E	0.69	B	0.91	E	0.70	B	0.00	0.01	N	N
208. Bison & SR-73 NB Ramps	0.68	B	0.71	C	0.68	B	0.70	B	0.00	-0.01	N	N
209. Bison & SR-73 SB Ramps	0.48	A	0.39	A	0.49	A	0.40	A	0.01	0.01	N	N
210. Berkley & Harvard	0.47	A	0.57	A	0.47	A	0.58	A	0.00	0.01	N	N
211. Berkley & Campus	0.55	A	0.61	B	0.56	A	0.63	B	0.01	0.02	N	N
215. California & Harvard	0.44	A	0.50	A	0.45	A	0.52	A	0.01	0.02	N	N

Table 5-3 Intersection LOS Summary – Long-Range Interim Year Approved (Continued)

Description	Long-Range Interim Year No Project				Long-Range Interim Year With Project				Difference		Significant Impact?	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM	AM	PM
216. California & Campus	0.46	A	0.61	B	0.48	A	0.64	B	0.02	0.03	N	N
232. Culver & I-405 NB Ramps	0.61	B	0.79	C	0.61	B	0.79	C	0.00	0.00	N	N
233. Culver & I-405 SB Ramps	0.74	C	0.74	C	0.73	C	0.75	C	-0.01	0.01	N	N
234. Culver & Michelson	0.71	C	0.91	E	0.71	C	0.91	E	0.00	0.00	N	N
235. Culver & University	0.86	D	0.86	D	0.86	D	0.87	D	0.00	0.01	N	N
236. Culver & Harvard	0.76	C	0.73	C	0.75	C	0.74	C	-0.01	0.01	N	N
237. Culver & Campus	0.62	B	0.59	A	0.64	B	0.59	A	0.02	0.00	N	N
238. Culver & Bonita	0.58	A	0.49	A	0.59	A	0.49	A	0.01	0.00	N	N
239. Bonita & Newport Coast	0.53	A	0.59	A	0.53	A	0.59	A	0.00	0.00	N	N
240. Bonita & SR-73 NB Ramps	0.57	A	0.61	B	0.56	A	0.61	B	-0.01	0.00	N	N
241. Bonita & SR-73 SB Ramps	0.48	A	0.52	A	0.46	A	0.53	A	-0.02	0.01	N	N
280. Newport Coast & SR-73 NB Ramps	0.58	A	0.52	A	0.57	A	0.52	A	-0.01	0.00	N	N

Analysis uses the City of Irvine Criteria
Shading denotes a location exceeding the City's performance threshold of LOS D.
Source: ITAM15

Table 5-4 ICU & LOS Summary – Buildout Approved

Description	Buildout No Project				Buildout With Project				Difference		Significant Impact?	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM	AM	PM
84. MacArthur & Campus .	0.76	C	1.03	F	0.78	C	1.03	F	0.02	0.00	N	N
100. Von Karman & Main	0.73	C	0.83	D	0.73	C	0.83	D	0.00	0.00	N	N
105. Von Karman & Campus	0.77	C	0.88	D	0.77	C	0.88	D	0.00	0.00	N	N
143. Jamboree & I-405 NB Ramps	0.81	D	0.94	E	0.82	D	0.94	E	0.01	0.00	N	N
144. Jamboree & I-405 SB Ramps	0.88	D	0.84	D	0.88	D	0.84	D	0.00	0.00	N	N
145. Jamboree & Michelson	0.91	E	1.03	F	0.92	E	1.03	F	0.01	0.00	N	N
146. Jamboree & Dupont	0.67	B	0.80	C	0.66	B	0.80	C	-0.01	0.00	N	N
147. Jamboree & Campus	0.84	D	0.82	D	0.85	D	0.82	D	0.01	0.00	N	N
148. Jamboree & Birch	0.68	B	0.59	A	0.67	B	0.59	A	-0.01	0.00	N	N
149. Jamboree & Fairchild	0.63	B	0.72	C	0.63	B	0.73	C	0.00	0.01	N	N
150. Jamboree & MacArthur	0.81	D	0.84	D	0.82	D	0.84	D	0.01	0.00	N	N
174. Carlson & Michelson	0.70	B	0.80	C	0.70	B	0.81	D	0.00	0.01	N	N
175. Carlson Av & Campus	0.71	C	0.81	D	0.71	C	0.81	D	0.00	0.00	N	N
176. Fairchild & MacArthur	0.80	C	0.87	D	0.80	C	0.88	D	0.00	0.01	N	N
188. Harvard & Michelson	0.85	D	0.81	D	0.84	D	0.80	C	-0.01	-0.01	N	N
189. Harvard & University	0.82	D	0.85	D	0.83	D	0.86	D	0.01	0.01	N	N
190. University & Campus	0.75	C	0.82	D	0.75	C	0.83	D	0.00	0.01	N	N
191. Mesa & University	0.49	A	0.59	A	0.49	A	0.59	A	0.00	0.00	N	N
192. California & University	0.98	E	0.80	C	0.98	E	0.81	D	0.00	0.01	N	N
193. MacArthur NB & University	0.72	C	0.80	C	0.72	C	0.80	C	0.00	0.00	N	N
194. MacArthur SB & University	0.69	B	0.63	B	0.69	B	0.63	B	0.00	0.00	N	N
202. Bridge & Harvard	0.59	A	0.52	A	0.59	A	0.51	A	0.00	-0.01	N	N
203. Bridge & Campus	1.03	F	0.85	D	1.03	F	0.86	D	0.00	0.01	N	N
208. Bison & SR-73 NB Ramps	0.68	B	0.77	C	0.70	B	0.77	C	0.02	0.00	N	N
209. Bison & SR-73 SB Ramps	0.45	A	0.38	A	0.45	A	0.39	A	0.00	0.01	N	N
210. Berkley & Harvard	0.43	A	0.55	A	0.44	A	0.55	A	0.01	0.00	N	N
211. Berkley & Campus	0.60	A	0.63	B	0.61	B	0.64	B	0.01	0.01	N	N
215. California & Harvard	0.40	A	0.52	A	0.43	A	0.52	A	0.03	0.00	N	N

Table 5-4 Intersection LOS Summary – Buildout Approved (Continued)

Description	Buildout No Project				Buildout With Project				Difference		Significant Impact?	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM	AM	PM
216. California & Campus	0.62	B	0.80	C	0.64	B	0.83	D	0.02	0.03	N	N
232. Culver & I-405 NB Ramps	0.67	B	0.90	D	0.66	B	0.89	D	-0.01	-0.01	N	N
233. Culver & I-405 SB Ramps	0.70	B	0.71	C	0.70	B	0.71	C	0.00	0.00	N	N
234. Culver & Michelson	0.64	B	0.85	D	0.63	B	0.85	D	-0.01	0.00	N	N
235. Culver & University	0.85	D	0.84	D	0.85	D	0.85	D	0.00	0.01	N	N
236. Culver & Harvard	0.71	C	0.72	C	0.72	C	0.72	C	0.01	0.00	N	N
237. Culver & Campus	0.53	A	0.59	A	0.55	A	0.60	A	0.02	0.01	N	N
238. Culver & Bonita	0.58	A	0.54	A	0.60	A	0.54	A	0.02	0.00	N	N
239. Bonita & Newport Coast	0.56	A	0.59	A	0.56	A	0.58	A	0.00	-0.01	N	N
240. Bonita & SR-73 NB Ramps	0.59	A	0.59	A	0.58	A	0.57	A	-0.01	-0.02	N	N
241. Bonita & SR-73 SB Ramps	0.48	A	0.50	A	0.49	A	0.49	A	0.01	-0.01	N	N
280. Newport Coast & SR-73 NB Ramps	0.53	A	0.52	A	0.53	A	0.52	A	0.00	0.00	N	N

Analysis uses the City of Irvine Criteria
Shading denotes a location exceeding the City's performance threshold of LOS D.
Source: ITAM15

Table 5-5 Intersection LOS Summary – General Plan Buildout

	General Plan Buildout No Project				Buildout With Project (Housing Amendment)				Difference		Significant Impact?	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
Description	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM	AM	PM
9. MacArthur & Campus	0.810	D	1.241	F	0.812	D	1.241	F	0.002	0.000	N	N
11. Von Karman & Campus	0.731	C	0.973	E	0.734	C	0.976	E	0.003	0.003	N	N
13. Jamboree & Campus	0.930	E	1.180	F	0.938	E	1.182	F	0.008	0.002	N	N
46. Bison & SR-73 NB Ramps	0.517	A	0.609	B	0.517	A	0.609	B	0.000	0.000	N	N
47. Bison & SR-73 NB Ramps	0.422	A	0.322	A	0.422	A	0.331	A	0.000	0.009	N	N
53. Bonita Canyon & SR-73 NB Ramps	1.060	F	0.762	C	1.041	F	0.765	C	-0.019	0.003	N	N
54. Bonita Canyon & SR-73 SB Ramps	0.461	A	0.660	B	0.442	A	0.675	B	-0.019	0.015	N	N
62. Newport Coast & SR-73 NB Ramps	0.650	B	0.400	A	0.641	B	0.400	A	-0.009	0.000	N	N

N = not a significant impact
Analysis uses the City of Newport Beach Criteria
Source: City of Newport Beach General Plan

5.3 HOUSING AMENDMENT IMPACT SUMMARY

UCI proposes to amend the current 2007 LRDP in order to increase Student Housing capacity from 50 percent of student enrollment to 60 percent of student enrollment. This report evaluated potential traffic related impacts from the proposed Housing Amendment on the surrounding circulation system, specifically arterial roadways and intersections in the City of Irvine, and intersections in the City of Newport Beach.

The results of the analyses show that the Housing Amendment would not significantly impact any arterial roadway segments in the City of Irvine under Long-Range Interim Year Approved conditions and under Buildout Approved conditions. Likewise, no intersections within the study area would be significantly impacted under the same scenarios.

The results of the intersection impact analysis also showed that no intersections would be significantly impacted in the City of Newport Beach with the proposed Housing Amendment.

6.0 VMT ANALYSIS

Under the California Environmental Quality Act (CEQA), administrative regulations and guidelines are set forth that explain how to determine whether an activity (i.e., proposed project) is subject to environmental review, the steps to undertake the review, and the required content of the review. Since the original CEQA, subsequent legislations have updated the CEQA guidelines to better achieve the State's efforts to improve air quality and reduce greenhouse gas emissions through transportation planning. Beginning July 1, 2020, updated CEQA guidelines will go into effect that include sections created by Senate Bill 743 (SB 743). Local agencies have the option to implement the new guidelines immediately, however, the provisions of the updated sections will apply statewide beginning July 1, 2020.

6.1 SIGNIFICANCE THRESHOLDS

SB 743 requires the Governor's Office of Planning and Research (OPR) to establish recommendations for identifying and mitigating transportation impacts within CEQA. Generally, SB 743 moves away from using delay-based level of service as the primary metric for identifying a project's significant impact to instead use vehicle miles traveled (VMT). The final Technical Advisory released by OPR in December 2018 provides guidance on evaluating transportation impacts and VMT and is the guidance on which this VMT analysis is based on. The Technical Advisory recommends new significance thresholds that may constitute a significant transportation impact. The recommended significance thresholds are summarized in **Table 6-1**.

Table 6-1 SB 743 Recommended Significance Thresholds

Type:	Metric:	Threshold:
Residential development	Household VMT per capita	15% less than existing city household VMT per capita or regional household VMT per capita
Office development	VMT per employee	15% less than existing regional VMT per employee
Retail development	Total VMT	If project causes a net increase in total VMT
Other project types	To be determined by lead agency through consideration of the purposes of the legislation (i.e., reductions to GHG, VMT per capita, and automobile trip generation)	

If a significant impact is identified utilizing the aforementioned significance thresholds, mitigation must be identified.

Under OPR's recommendations, lead agencies have the discretion to set or apply their own thresholds of significance or rely on thresholds recommended by other agencies. At this time, UCI has not adopted a formal methodology or significance criteria for VMT analysis. Since UCI is located within the City of Irvine, significance thresholds set by the City may be appropriate for UCI. However, the City is currently in the process of updating ITAM and has yet to establish a VMT threshold. The Orange County Transportation Authority (OCTA) maintains the Orange County Transportation Analysis Model (OCTAM) and is another resource that could set regional VMT thresholds appropriate for UCI to utilize. However, at this time, OCTA has not formalized any policies or directives regarding VMT analysis. As such, OPR's guidelines state that a qualitative analyses should be conducted when methods do not exist for undertaking a quantitative analysis.

In order to evaluate Verano 8 and the LRDP Housing Amendment's potential transportation impacts related to VMT, qualitative significance criteria have been established to evaluate the Project's compatibility with the statutory goals for the VMT metric. The following are the VMT metric's three statutory goals as stated in the Technical Advisory:

1. The reduction of greenhouse gas emissions
2. The development of multimodal transportation networks
3. A diversity of land uses

The significance criteria utilized in this analysis is summarized in **Table 6-2** and takes into consideration the three goals listed above, OPR's Technical Advisory, and California Air Pollution Control Officers Association's (CAPCOA) Comprehensive Report for Quantifying Greenhouse Gas Mitigation Measures. The CAPCOA document provides 54 TDM strategies associated with the reductions of VMT and GHG emissions and is an appropriate resource for this type of analysis.

6.2 VMT IMPACT ANALYSIS

Prior to undertaking a detailed VMT study, OPR advises that lead agencies conduct a screening process "to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study". OPR suggests that lead agencies may screen out VMT impacts using project size, maps, transit availability and provision of affordable housing. For this analysis Verano 8 and the LRDP Housing Amendment have been evaluated using the same screening process.

6.2.1 TDM Strategies for the Reduction of Greenhouse Gas Emissions

As noted above, one goal of utilizing the VMT metric for evaluation of transportation impacts is to reduce greenhouse gas emissions. TDM measures are important and effective tools to reduce greenhouse gas emissions, increasing vehicle efficiency and reducing the amount of VMT. Co-benefits to reducing VMT include less vehicle crashes, improved air quality and improved physical and mental health. UCI proactively utilizes TDM measures.

UCI's Sustainable Transportation Program utilizes various TDM measures and was created with the goal to "reduce the total number of vehicle trips made to the campus by faculty, staff and students and reduce commute emissions". UCI's transportation and Distribution Services offers a number of sustainable commuting options as listed below:

Table 6-2 VMT Significance Criteria

Category	Criteria/Screening	Threshold
1. TDM Strategies for the reduction of greenhouse gas emissions	Identify existing TDM measures that increase vehicle efficiency, reduce amount of vehicle travel, improve human health, reduce vehicle crashes, improve air quality, improve physical and mental health, and encourage use of transit. Evaluate if the Project would eliminate or reduce the existing TDM measures.	If the Project is not anticipated to eliminate or reduce any existing TDM measures, the Project is assumed to have a less than significant impact.
2. Multi-modal transportation	Providing alternative modes of transportation that has high accessibility and connectivity reduces vehicle miles traveled, reduces single occupancy vehicles, and reduces VMT per capita. Identify existing pedestrian, bicycle and transit facilities that provide alternative modes of transportation in place of a single-occupancy vehicle. Evaluate the accessibility and connectivity of pedestrian, bicyclist, and transit facilities around the Project site.	If the Project restricts access or alters a route, this may indicate a significant impact.
3. Diversity of land uses	Interactions between different land uses and interactions between land use and transportation have the potential to reduce VMT. Evaluate the surrounding uses of the Project and the interaction between land use and transportation.	If the Project is complementary and consistent with the existing land use patterns, then the Project is assumed to have a less than significant impact.
4. Proximity to transit	The Technical Advisory states that Projects within ½ mile of a major transit stop or a stop located along a high-quality transit corridor reduce vehicle miles traveled and therefore can be screened out from completing a full VMT analysis. Evaluate the Project's existing and future transit accessibility.	If the Project is within ½ mile of a major transit stop or along a high-quality transit corridor, the Project is assumed to have a less than significant impact. If not, provide an analysis of existing and future transit accessibility.
5. RTP/SCS Consistency	The purpose of the RTP/SCS is to evaluate regional land use patterns and transportation systems to achieve the State's target GHG emissions reduction goals. Evaluate if the Project is consistent with the RTP/SCS. If the Project is inconsistent, then the inconsistency should be evaluated for a significant impact on transportation.	If the Project is consistent with the RTP/SCS, then the Project would have less than significant impact. If the Project is inconsistent then the inconsistency should be evaluated for a significant impact on transportation.

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- Carpool matching through WAZEpool (an on-demand carpool matching service)
- Carpool incentive program for employees and graduate students (free parking for carpools)
- Ride-share through Zimride (a private ride-sharing network for UCI)
- OC Vanpools (also known as “super carpools” subsidized in part by OCTA and operated through a third party provider)
- Guaranteed Ride Home Program
- Subsidized bus passes (OCTA)
- Rebates on train tickets for employees and students who use the train to commute to campus and do not purchase long term parking permits
- Convenient cost-effective options to reduce monthly transportation expenses for University students and employees
- UCI – OC University Bus Program (provides unlimited access to the OCTA bus system)
- Carshare service through Zip Car (the University’s carshare)
- UCI Zotwheels bike ridesharing service (currently offline due to expansion)
- Anteater Express (UCI’s campus shuttle service with live bus tracking)
- UCI Medical Campus shuttle route (provides rides to UCI Medical Hospital located outside of the campus)

The TDM strategies listed above are consistent with CAPCOA’s comprehensive list of TDM mitigation measures that reduce GHG emissions.

The Sustainability Tracking, Assessment & Rating System (STARS) website summarizes the results of a survey of UCI students conducted in 2017. The purpose of the survey was to evaluate student commute habits. The survey concludes that 20 percent of student survey respondents commute with only the driver in the vehicle (single occupancy vehicle), 4 percent vanpool or carpool, 28 percent take the campus shuttle or public transportation, less than one percent use a motorcycle or scooter, and 47 percent walk, bicycle, or use other non-motorized means. Overall, this shows that approximately 70 percent of students use more sustainable commuting options. This can be attributed to the several TDM measures listed above.

6.2.1.1 Verano 8 TDM Screening Analysis

The Verano 8 development project would increase the amount of graduate housing for students enrolled at UCI. The availability of student housing would reduce VMT because it would result in a corresponding reduction in commuter trips. Verano 8 would not eliminate any existing TDM measures, but rather, the availability of the campus shuttle service, bikeshare, and car share offered through UCI’s Sustainable Transportation Program would lower auto dependency for Verano 8 residents, thereby reducing on-campus VMT.

In comparison to a scenario where Verano 8 housing was not available, the development of Verano 8 would reduce VMT because it would eliminate commuter trips and the TDM measures in place would reduce auto dependency to get around campus. Therefore, the Verano 8 development would have less than significant impact on VMT based on the TDM screening threshold.

6.2.1.2 LRDP Housing Amendment TDM Screening Analysis

Similarly, the LRDP Housing Amendment would provide additional student housing, providing the same VMT reducing benefits as the Verano 8 development described above. The availability of student housing for both undergraduates and graduate students would eliminate otherwise commuter trips and the campus-wide TDM strategies in place by UCI would lower auto dependency for on-campus residents. The LRDP Housing Amendment would not eliminate any existing TDM measures, therefore, LRDP Housing Amendment would have less than significant impact on VMT based on the TDM screening threshold.

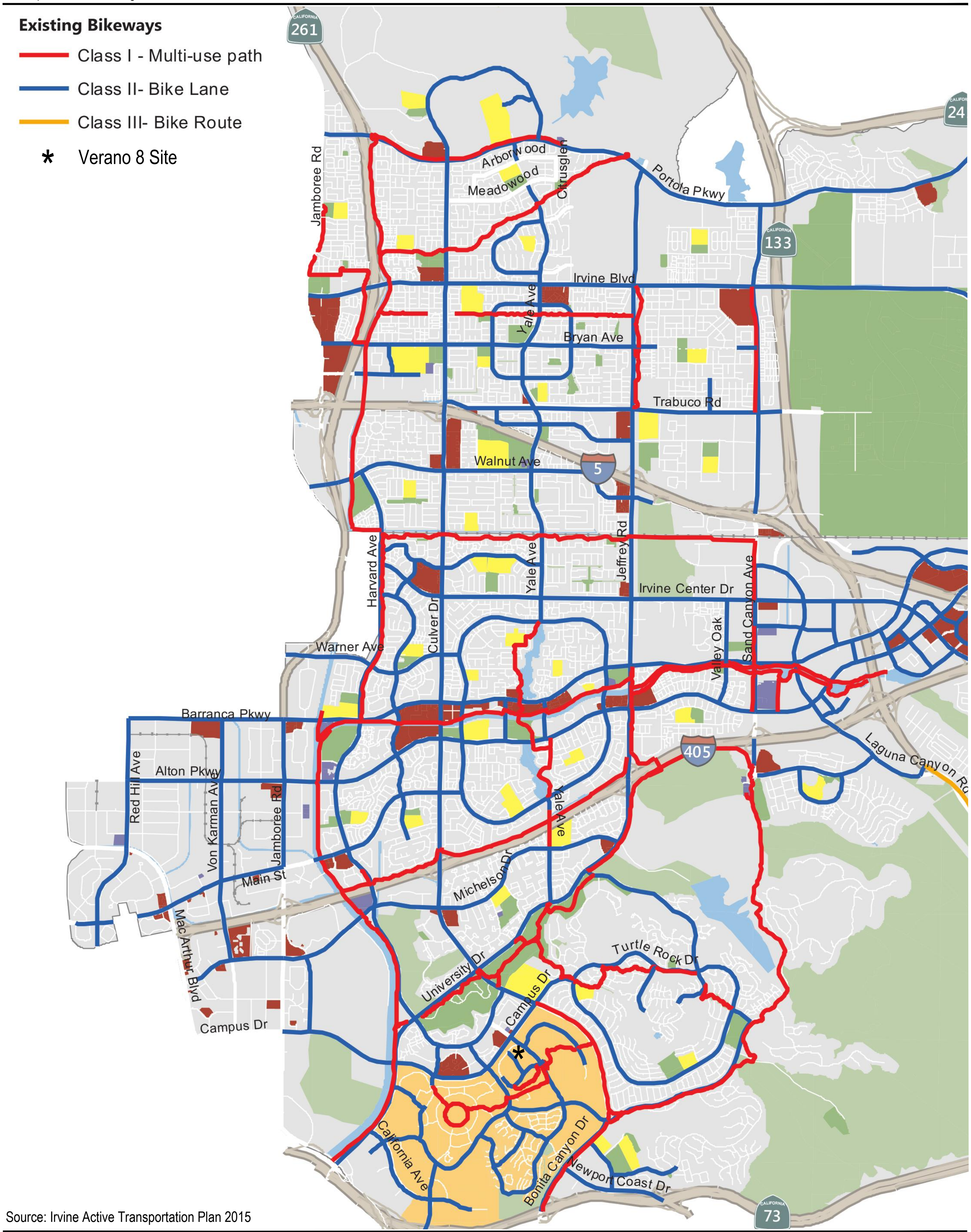
6.2.2 Multimodal Transportation networks

Another goal of utilizing the VMT metric for evaluation of transportation impacts is to facilitate the “development of multimodal transportation networks”. A multimodal transportation network provides opportunities for people to safely get to their destinations by means other than a signal occupancy vehicle. Multimodal networks are a component of a Complete Street that address the needs of pedestrians, bicyclists, transit riders and motorists. The development of multimodal features within a development project is a TDM strategy listed by CAPCOA that would reduce VMT and GHG emissions. OPR also notes that the increase in transit ridership “should not be considered an adverse impact”, noting that while the increase in ridership may slow transit service, it adds accessibility, destinations and proximity. When choices in transportation are available, single occupancy vehicle VMT is reduced. Projects that block access, removes, or interferes with pedestrian paths, bicycle paths, or transit stops would have a significant impact on VMT.

There are existing Class I Multi-Use Paths and Class II Bicycle Lanes in and around the UCI campus, such as a multi-use path from Bridge Road to Ring Road on the west-side of the UCI campus and a multi-use path from Culver Drive to Ring Road on the east-side of the campus. These multi-use paths are open to pedestrians and bicycles and include a pedestrian bridge over East Peltason Drive. There are existing bike lanes on Campus Drive, East Peltason Drive, West Peltason Drive, California Avenue, Arroyo Drive, Adobe Circle South, Verano Road, Anteater Drive, Academy Way, Bridge Road and Bison Avenue that create a bicycle network to get in and around campus. The bike lanes on the streets noted above connect to the City of Irvine’s bicycle network (See **Figure 6-1).** The City of Irvine’s 2015 Active Transportation Plan shows that the existing bicycle facilities around the UCI campus, with the exception of Campus Drive, are low stress facilities, meaning the level of stress a bicyclist feels while using the facilities are low. The low level of stress creates a more pleasurable and appealing ride that would encourage students to ride their bike to get around campus.

In addition, UCI is a gold level “Bicycle Friendly University” and offers bicycle facilities, education and amenities such as bike registration, parking racks, bike festival, low cost bike sales, self-service bike repair stands and air pumping stations, and bike shops.

As later discussed in detail in Section 6.2.4, there are several transit stops available for students that live on campus to use to get around the campus. **Figure 6-2** shows the availability of OCTA public transit stops and **Figure 6-3** shows the Anteater Express shuttle services stops around the campus.



Source: Irvine Active Transportation Plan 2015

Figure 6-1

City of Irvine Existing Bicycle Network

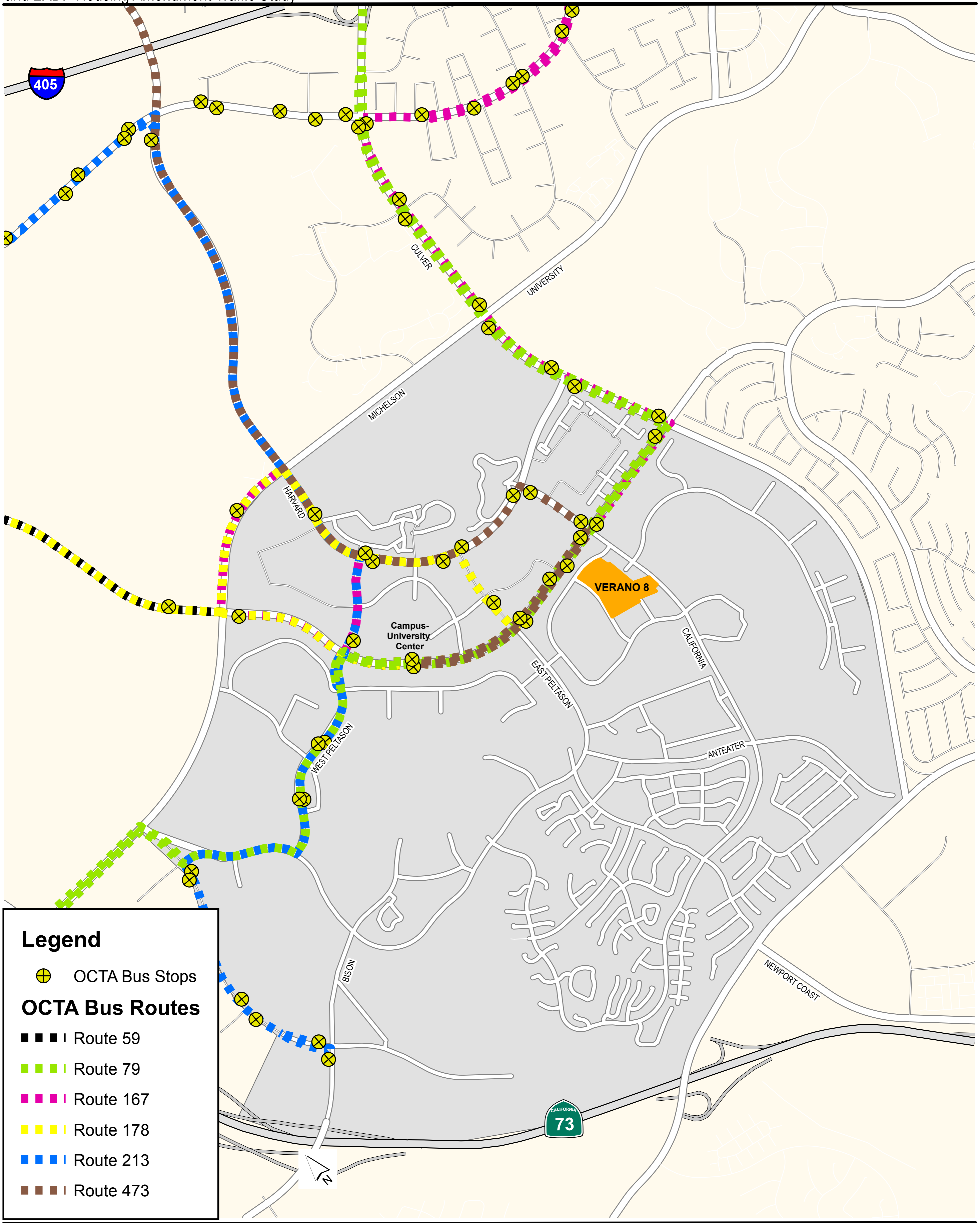
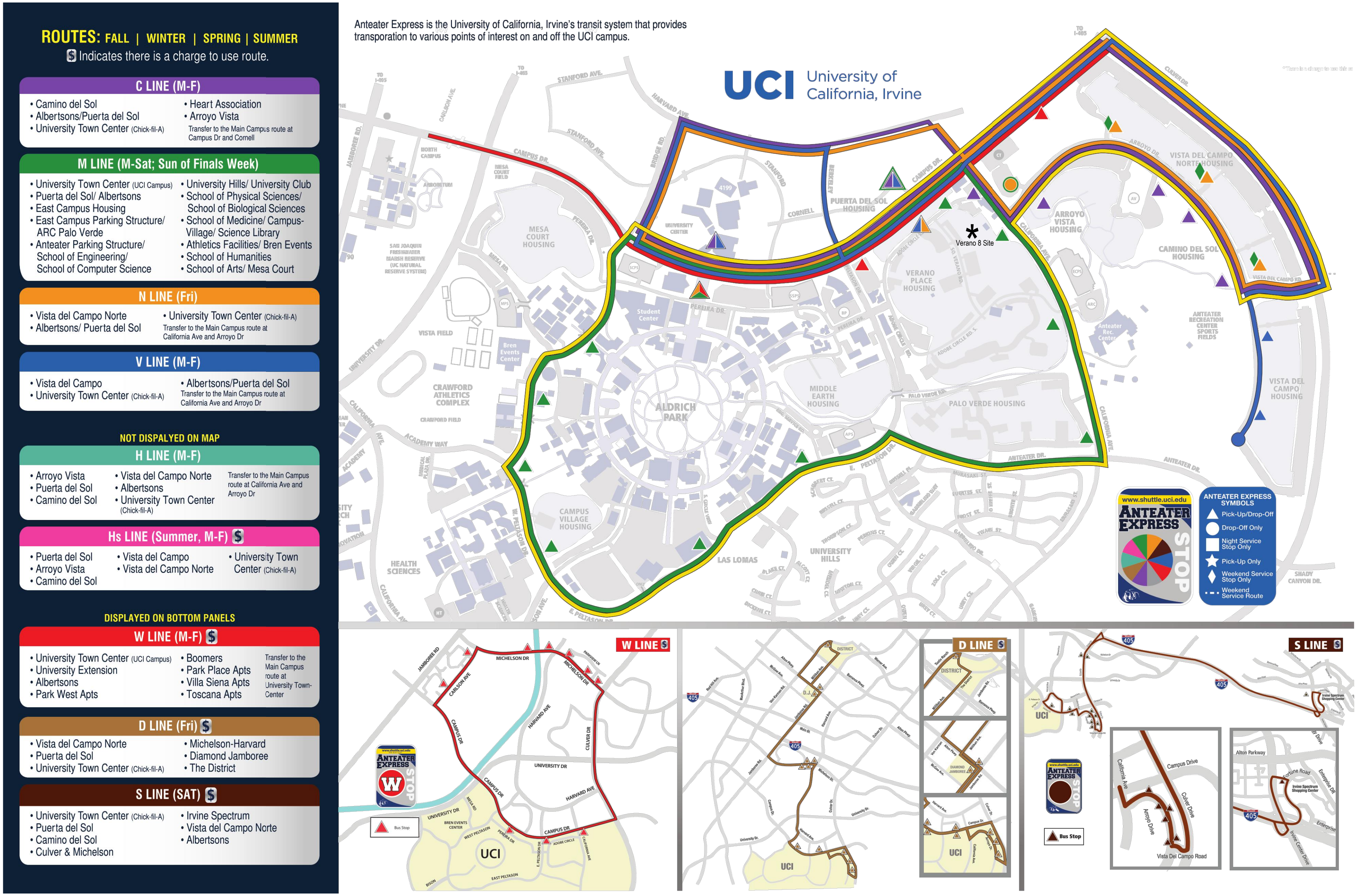


Figure 6-2
OCTA Transit Routes and Stops Near UCI


ROUTES: FALL | WINTER | SPRING | SUMMER
$ Indicates there is a charge to use route.
C LINE (M-F)
• Camino del Sol
• Albertsons/Puerta del Sol
• University Town Center (Chick-fil-A)
• Heart Association
• Arroyo Vista
Transfer to the Main Campus route at Campus Dr and Cornell
M LINE (M-Sat; Sun of Finals Week)
• University Town Center (UCI Campus)
• Puerta del Sol/ Albertsons
• East Campus Housing
• East Campus Parking Structure/ ARC Palo Verde
• Anteater Parking Structure/ School of Engineering/ School of Computer Science
• University Hills/ University Club
• School of Physical Sciences/ School of Biological Sciences
• School of Medicine/ Campus-Village/ Science Library
• Athletics Facilities/ Bren Events
• School of Humanities
• School of Arts/ Mesa Court
N LINE (Fri)
• Vista del Campo Norte
• Albertsons/ Puerta del Sol
• University Town Center (Chick-fil-A)
Transfer to the Main Campus route at California Ave and Arroyo Dr
V LINE (M-F)
• Vista del Campo
• University Town Center (Chick-fil-A)
• Albertsons/Puerta del Sol
Transfer to the Main Campus route at California Ave and Arroyo Dr
NOT DISPLAYED ON MAP
H LINE (M-F)
• Arroyo Vista
• Puerta del Sol
• Camino del Sol
• Vista del Campo Norte
• Albertsons
• University Town Center (Chick-fil-A)
Transfer to the Main Campus route at California Ave and Arroyo Dr
Hs LINE (Summer, M-F) $
• Puerta del Sol
• Arroyo Vista
• Camino del Sol
• Vista del Campo
• Vista del Campo Norte
• University Town Center (Chick-fil-A)
DISPLAYED ON BOTTOM PANELS
W LINE (M-F) $
• University Town Center (UCI Campus)
• University Extension
• Albertsons
• Park West Apts
• Boomers
• Park Place Apts
• Villa Siena Apts
• Toscana Apts
Transfer to the Main Campus route at University Town-Center
D LINE (Fri) $
• Vista del Campo Norte
• Puerta del Sol
• University Town Center (Chick-fil-A)
• Michelson-Harvard
• Diamond Jamboree
• The District
S LINE (SAT) $
• University Town Center (Chick-fil-A)
• Puerta del Sol
• Camino del Sol
• Culver & Michelson
• Irvine Spectrum
• Vista del Campo Norte
• Albertsons
Anteater Express is the University of California, Irvine's transit system that provides transporation to various points of interest on and off the UCI campus.
UCI University of California, Irvine
Verano 8 Site
ALDRICH PARK
MESA COURT HOUSING
PUERTA DEL SOL HOUSING
VERANO PLACE HOUSING
ARROYO VISTA HOUSING
CAMINO DEL SOL HOUSING
VISTA DEL CAMPO NORTE HOUSING
VISTA DEL CAMPO HOUSING
MIDDLE EARTH HOUSING
PALO VERDE HOUSING
CAMPUS VILLAGE HOUSING
CRAWFORD ATHLETICS COMPLEX
UNIVERSITY HILLS
LAS LOMAS
HEALTH SCIENCES
www.shuttle.uci.edu
ANTEATER EXPRESS
STOP
ANTEATER EXPRESS SYMBOLS
Pick-Up/Drop-Off
Drop-Off Only
Night Service Stop Only
Pick-Up Only
Weekend Service Stop Only
Weekend Service Route
W LINE $
D LINE $
S LINE $
UCI
Bus Stop

6.2.2.1 Verano 8 Multimodal Transportation Network Analysis

The Verano 8 development site is currently vacant, with the exception of a small parcel that would be redeveloped as part of the Project. The development of Verano 8 would not remove any pedestrian or bicycle facilities, or transit stops. Rather, Verano 8 would enhance such facilities through the site development design process. Additional traffic calming measures have been evaluated along California Avenue, and Verano Road that would slow traffic to accommodate the increase presence of pedestrians and bicyclists. Since Verano 8 is enhancing the multimodal transportation network, Verano 8 would have less than significant impact on VMT based on the multimodal transportation screening threshold.

The available transit near the Verano 8 is discussed in detail in Section 6.2.4. The development of Verano 8 would not remove any transit stops and therefore would not have a significant impact on VMT.

6.2.2.2 LRDP Housing Amendment Multimodal Transportation Network Analysis

The potential locations for additional student housing include redevelopment of existing student housing at Verano 1, 2, and 3, and Campus Village. Another potential location is at the northeast corner of California Avenue and Anteater Drive, which is currently vacant. At this time, site plans have not been developed for these potential sites. UCI aims to enhance its multimodal network and any redevelopment would incorporate pedestrian, bicyclists and transit features during the site design process. Therefore, any removed pedestrian, bicyclists or transit amenities would be replaced and enhanced. Similarly, the vacant undeveloped site would not remove or block any existing pedestrian, bicyclists and transit stops. Since future student housing development would enhance the multimodal transportation network, the LRDP Housing Amendment would have less than significant impact on VMT based on the multimodal transportation screening threshold.

6.2.3 Diversity of Land uses

The third goal of the VMT metric is the development of “a diversity of land uses”. The Technical Advisory notes that new land use projects alone will not reduce VMT, however “interactions between land use projects, and also between land use and transportation projects, existing and future, together affect VMT”.

Verano 8 and the LRDP Housing Amendment are both part of a larger plan, specifically, UCI’s Long Range Development Plan. The 2007 LRDP identified general land use developments to support future campus growth. Development of the LRDP and the resulting mix of land use contained in the 2007 LRDP follow planning principles that reflect the desired character for the campus. The principles are as follows[2]:

1. Accommodate the physical resources needed to support strategic academic goals
2. Provide access while maintaining environmental quality
3. Build a cohesive academic community
4. Build and maintain quality residential neighborhoods

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[2] 2007 Long Range Development Plan, A Framework to Guide Physical Development at the University of California, Irvine, Through 2025-2026, November 2007.

5. Establish centers of activity to promote campus life
6. Maintain human scale
7. Maintain planning discipline to optimize valuable land resources
8. Manage transportation needs proactively
9. Unify the campus with linkages
10. Preserve and enhance open space corridors to balance campus development
11. Develop high-quality edges with neighboring communities
12. Promote sustainable development practices

Application of such principles has created a campus with a diversity of land uses and a complimentary transportation network that has VMT reducing outcomes. This is reflected in the 2017 student survey that indicated 79 percent of students are using sustainable transportation methods such as walking, biking, transit, carpooling, or vanpooling. If a future project is contained within the LRDP or is consistent with the land use patterns of the LRDP, then the project would have less than significant impact on VMT.

6.2.3.1 Verano 8 Diversity of Land Uses Analysis

The Verano 8 development would create student housing for 1,200 graduate students. The need for graduate student housing is based on the demand from graduate student enrollment. Without the available graduate student housing on campus, graduate student enrollment would not decrease, but rather, future students would find off-campus housing and would therefore increase VMT by commuting.

The Verano 8 development is consistent with the 2007 LRDP and is within the allocated student housing capacity. Meaning this increase of student housing was strategically planned to balance the Academic, Support, Research and Development, and recreational uses of the campus. Therefore, since the project is consistent with the LRDP, and the LRDP was developed with sustainable development practices that balance land use, the environment and transportation, the Project would have less than significant impact on VMT based on the diversity of land use screening threshold.

6.2.3.2 LRDP Housing Amendment Diversity of Land Uses Analysis

The LRDP Housing Amendment would increase the number of total student housing for both undergraduate and graduate students in order to meet the student enrollment demands. The amendment would increase student housing availability from approximately 50% of student enrollment to 60% of student enrollment.

As described above, student enrollment is not dependent on student housing, but rather, without housing on campus students would instead find elsewhere to live off campus, thereby increasing commuter VMT. The addition of student housing would not disrupt the land use patterns set forth in the 2007 LRDP because two of the three sites would be redeveloped with a higher density and the third undeveloped site was planned for student housing in the LRDP. Therefore, the LRDP Housing Amendment is consistent with the land use patterns in the 2007 LRDP and would have less-than-significant impact on VMT based on the diversity of land use screening threshold.

6.2.4 Proximity to Transit VMT Analysis

OPR suggests that a Project can be "screened out" to have a less than significant impact on VMT if the project is within a half mile of an "existing major transit stop or an existing stop along a high quality transit corridor". A major transit stop is defined as "the intersection of two or more major bus routes with a frequency service interval of 15 minutes or less during the morning and afternoon peak commute periods".

Based on this definition the Verano 8 development project and the LRDP Housing Amendment would not be eligible to be "screened out". Therefore, transit accessibility was evaluated since CAPCOA cites transit accessibility as a measure that reduces VMT and GHG emissions.

6.2.4.1 Verano 8 Transit Accessibility Analysis

The Verano 8 development project is anticipated to increase transit ridership. Residents of Verano 8 would be able to use public bus transit (Orange County Transportation Authority) and campus-operated shuttle services (Anteater Express).

OCTA operates bus transit services to the UCI campus area. Located approximately a half mile west of the Verano 8 site is the Campus University Center at the Watson Bridge. This location houses a transit stop that provides access to 4 bus transit service lines (See previously referenced **Figure 6-2** for map). Future plans for the campus identify the Campus University Center at the Watson Bridge as a potential location for an expanded transit center. The expansion of the transit stop would allow for more buses and shuttles to stop at the Watson Bridge for pick up/drop offs. Currently bus transit Routes 59, 79, 175, and 178 stop at the Watson Bridge.

Within a half mile range of Verano 8 are approximately nine bus transit stops (routes departing at Watson Bridge), with the closest bus transit stops located on Campus Drive, which are under a quarter mile distance from Verano 8. Routes 59, 79, 175, and 178 have headways that range on average from 30 minutes to an hour during the AM (7-9) and PM (4-6) peak hours. Route 473 which is a first mile/last miles service from the Tustin Metrolink Station to the UCI campus has headways at the Watson Bridge that ranges from 11 minutes to 29 minutes in the AM period and 10 minutes to 37 minutes in the PM period. Although this would not be considered a high quality stop per the definition noted above, this would be considered a high quality stop for the area.

Anteater Express is UCI's transit system that provides transportation to various areas on and off the UCI Campus. Anteater Express is an attractive mode of transportation because of the short distance stops and fare. UCI also provides enhanced services that increases the ease of using the shuttle service such as the on-line Live Bus Tracking system that give real time data of the buses in service. An application is also available for download that allow users to view the shuttle's location. UCI also offers a Medical Center shuttle that is available to students, faculty and staff.

As shown in the previously referenced **Figure 6-3**, there are multiple shuttle stops along California Avenue and Campus Drive that provide high accessibility for students living on campus. Approximately 11 stops are available within a half mile distance from the Verano 8 site. The availability of the shuttle allows students to live on campus without a need for a personal vehicles. The availability and convenience of the Anteater Express is a TDM strategy that reduces single occupancy VMT around the campus.

The student commute survey discussed in Section 6.2.1 showed that 28 percent of students utilize the campus shuttle or public bus system. This number is attributed to the availability of bus transit stops around the campus.

The Verano 8 development would not remove any transit stops but would increase transit ridership with more student living on campus, as opposed to commuting in a single occupancy vehicle from areas outside of the campus. The residents of Verano 8 would have a lower dependency on personal vehicles to get around campus, therefore the Verano 8 development would have less than significant impact on VMT based on the proximity to transit screening threshold.

6.2.4.2 LRDP Housing Amendment Transit Accessibility Analysis

The LRDP Housing Amendment would increase housing at various locations, potentially at the existing Verano 1-3 area, the Campus Village area, and at the northeast corner of California Avenue and Anteater Drive intersection.

The redevelopment of Verano 1-3 is adjacent to the Verano 8 site and would have similar access to pubic bus transit and Anteater Express shuttle service as described in Section 6.2.4.1. The Campus Village site is located “on-campus” and students would most likely walk to get to their destinations on campus. The Watson Bridge, with access to four OCTA bus routes is approximately 0.60 miles from the Campus Village site and is walkable from anywhere on campus. The vacant site at the corner of California Avenue and Anteater Drive intersection is approximately 0.80 miles from public bus stops located on Campus Drive. There are existing Anteater Express shuttle stops along Arroyo Drive that currently service Vista Del Campo student housing. The development of new student housing along Arroyo Drive would extend Arroyo Drive from its current southerly terminus at Vista Del Campo to California Avenue at Palo Verde. This new connection allows for easier access for shuttles servicing Arroyo Drive.

As described above, the potential sites for future student housing under the LRDP Housing Amendment would have sufficient access to public transit and shuttle transit stops. The future Arroyo Drive extension may increase shuttle accessibility for Arroyo Drive because the Arroyo Drive would no longer dead end. Based on the accessibility and proximity to bus and shuttle services, the LRDP Housing Amendment would have less than significant impact on VMT based on the proximity to transit screening threshold.

6.2.5 RTP/SCS Consistency Analysis

Metropolitan Planning Organizations (MPOs) are required to develop a Regional Transportation Plan and Sustainable Community Strategies (RTP/SCS). The purpose of the RTP/SCS is to evaluate regional land use patterns and transportation systems to achieve the State’s target GHG emissions reduction goals. For this analysis, if the Verano 8 development project or the LRDP Housing Amendment is inconsistent with the RTP/SCS, then the inconsistency should be evaluated for a significant impact on transportation.

The UCI campus is located in the Southern California Association of Governments (SCAG) MPO region. In 2016 SCAG's Regional Council adopted the 2016-2040 RTP/SCS with efforts for the next update in Spring 2020 already underway. According to the SCAG website, SCAG utilizes a "Bottom-Up Local Input and Envisioning Process" where feedback is solicited from local jurisdictions on localized information such as base land use and anticipated socio-economic growth (populations, employment, household). This information is typically a component of the City's General Plan, and if available, the City's traffic analysis model.

The City of Irvine initially adopted its General Plan in December 1973 with a comprehensive updated in 2000. Since then, the City has been growing and is now in the process of Phase 1 of their comprehensive General Plan Update. The City maintains the Irvine Traffic Analysis Model (ITAM) which incorporates buildout conditions (per General Plan) for the City and is frequently updated as projects go through entitlements. ITAM houses the type of information solicited by SCAG for use in the RTP.

The City of Irvine and UCI have a long standing cooperation in regard to campus planning and future growth and coordination has been made between UCI's LRDP and the City's General Plan. Therefore, growth assumed in UCI's LRDP is reflected in the City's General Plan as well as ITAM and would be the information supplied to SCAG during their Bottom-Up Local Input process.

6.2.5.1 Verano 8 RTP/SCS Consistency

The Verano 8 development if fully accounted for in the growth allocated by the 2007 LRDP. As mentioned above, coordination has been made between the land use assumptions used in the 2007 LRDP and City of Irvine. Therefore, since the project would be accounted for in the City's growth forecast, Verano 8 would be consistent with the RTP/SCS and would less than significant impact on transportation based on the RTP/SCS screening threshold.

6.2.5.2 LRDP Housing Amendment RTP/SCS Consistency

The LRDP Housing Amendment would add more student housing than what is accounted for in the 2007 LRDP and may be inconsistent with the RPT/SCS. Therefore, the increase in student housing is evaluated for a significant impact on transportation.

Traffic patterns for student housing differs from traditional residential uses. Student enrollment does not solely depend on the ability to live on campus, rather, students would commute from other parts of the City, County, and even from other Counties. In comparison to typical residential uses, if housing is not available, then the trips would not exist. Therefore, by providing additional student housing, commuter trips and vehicle miles traveled are reduced. Since students are willing to drive a longer distance to attend the University, reductions in VMT go beyond the City level but at the regional level. Because student housing does not create new trips, but rather shortens or eliminates trips that would still occur if the student housing was not built, the LRDP amendment would reduce VMT and have less than significant impact on transportation based on the RTP/SCS screening threshold.

7.0 REFERENCES

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11. OP 17: Employee Commute Modal Split, University of California, Irvine, The Sustainability Tracking, Assessment and Rating System, https://reports.aashe.org/institutions/university-of-california-irvine-ca/report/2018-03-28/OP/transportation/OP-17/ , last accessed June 2019.

12. City of Irvine's 2015 Active Transportation Plan, City of Irvine, April 2015.

13. OC Bus Book, Orange County Transportation Authority, February 2019.

Appendix A TRAFFIC COUNTS

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Location : CALIFORNIA AVENUE
Segment : CAMPUS DR TO ADOBE CIRCLE S
Client : STANTEC

Site: IRVINE
Date: 03/05/19
Day: Tuesday

Interval Begin	NB AM		NB PM		SB AM		SB PM		Combined AM		Combined PM	
12:00	33	102	54	193	14	54	64	229	47	156	118	422
12:15	25		54		21		51		46		105	
12:30	28		42		10		62		38		104	
12:45	16		43		9		52		25		95	
01:00	30	52	51	203	9	26	74	279	39	78	125	482
01:15	10		50		3		52		13		102	
01:30	6		49		6		75		12		124	
01:45	6		53		8		78		14		131	
02:00	6	13	46	193	7	10	66	238	13	23	112	431
02:15	2		54		3		40		5		94	
02:30	3		40		0		61		3		101	
02:45	2		53		0		71		2		124	
03:00	4	8	61	256	2	7	70	318	6	15	131	574
03:15	2		61		2		82		4		143	
03:30	1		76		1		80		2		156	
03:45	1		58		2		86		3		144	
04:00	0	6	61	256	2	5	62	297	2	11	123	553
04:15	2		63		1		70		3		133	
04:30	3		68		0		69		3		137	
04:45	1		64		2		96		3		160	
05:00	2	18	102	372	5	29	98	413	7	47	200	785
05:15	2		84		3		112		5		196	
05:30	7		80		4		95		11		175	
05:45	7		106		17		108		24		214	
06:00	4	45	82	334	19	96	92	389	23	141	174	723
06:15	8		88		28		98		36		186	
06:30	14		84		22		90		36		174	
06:45	19		80		27		109		46		189	
07:00	21	197	76	267	33	176	104	352	54	373	180	619
07:15	50		60		38		106		88		166	
07:30	72		69		47		78		119		147	
07:45	54		62		58		64		112		126	
08:00	65	247	62	276	60	229	76	334	125	476	138	610
08:15	74		74		58		98		132		172	
08:30	55		72		49		82		104		154	
08:45	53		68		62		78		115		146	
09:00	50	176	54	229	62	216	69	271	112	392	123	500
09:15	44		60		62		73		106		133	
09:30	46		70		42		70		88		140	
09:45	36		45		50		59		86		104	
10:00	32	139	66	221	40	176	58	206	72	315	124	427
10:15	34		47		38		51		72		98	
10:30	35		48		46		54		81		102	
10:45	38		60		52		43		90		103	
11:00	54	174	44	180	44	198	24	124	98	372	68	304
11:15	46		34		59		40		105		74	
11:30	34		40		51		34		85		74	
11:45	40		62		44		26		84		88	
Totals	1,177		2,980		1,222		3,450		2,399		6,430	
Split%	49.1		46.3		50.9		53.7					
Day Totals		4,157				4,672				8,829		
Day Splits		47.1				52.9						
Peak Hour	07:30		05:00		08:30		05:00		07:30		05:00	
Volume	265		372		235		413		488		785	
Factor	0.90		0.88		0.95		0.92		0.92		0.92	

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Location : CALIFORNIA AVENUE
Segment : ADOBE CIRCLE S TO ARROYO DR
Client : STANTEC

Site: IRVINE
Date: 03/05/19
Day: Tuesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	7	19	46	173	5	29	39	172	12	48	85	345
12:15	3		47		16		44		19		91	
12:30	3		42		3		41		6		83	
12:45	6		38		5		48		11		86	
01:00	6	14	61	205	12	19	41	188	18	33	102	393
01:15	5		54		1		52		6		106	
01:30	3		44		3		42		6		86	
01:45	0		46		3		53		3		99	
02:00	2	4	46	173	5	5	42	175	7	9	88	348
02:15	1		47		0		50		1		97	
02:30	1		35		0		33		1		68	
02:45	0		45		0		50		0		95	
03:00	4	8	54	251	1	3	52	218	5	11	106	469
03:15	1		67		1		52		2		119	
03:30	1		58		1		51		2		109	
03:45	2		72		0		63		2		135	
04:00	2	6	58	230	1	2	38	200	3	8	96	430
04:15	1		59		0		42		1		101	
04:30	1		56		0		60		1		116	
04:45	2		57		1		60		3		117	
05:00	2	16	86	333	3	21	78	266	5	37	164	599
05:15	1		97		4		62		5		159	
05:30	5		64		3		60		8		124	
05:45	8		86		11		66		19		152	
06:00	16	84	64	209	4	33	67	242	20	117	131	451
06:15	19		54		4		46		23		100	
06:30	18		37		6		57		24		94	
06:45	31		54		19		72		50		126	
07:00	25	143	52	150	25	145	69	190	50	288	121	340
07:15	30		38		32		48		62		86	
07:30	40		29		39		35		79		64	
07:45	48		31		49		38		97		69	
08:00	61	255	34	111	51	214	42	176	112	469	76	287
08:15	70		26		55		49		125		75	
08:30	62		28		48		46		110		74	
08:45	62		23		60		39		122		62	
09:00	42	182	22	105	46	172	39	124	88	354	61	229
09:15	46		31		42		29		88		60	
09:30	56		26		40		33		96		59	
09:45	38		26		44		23		82		49	
10:00	36	152	18	60	37	147	25	86	73	299	43	146
10:15	32		14		30		18		62		32	
10:30	36		14		40		22		76		36	
10:45	48		14		40		21		88		35	
11:00	58	180	18	41	34	127	20	57	92	307	38	98
11:15	43		9		32		10		75		19	
11:30	35		11		37		13		72		24	
11:45	44		3		24		14		68		17	
Totals	1,063		2,041		917		2,094		1,980		4,135	
Split%	53.7		49.4		46.3		50.6					
Day Totals		3,104				3,011				6,115		
Day Splits		50.8				49.2						
Peak Hour	08:00		05:00		08:00		05:00		08:00		05:00	
Volume	255		333		214		266		469		599	
Factor	0.91		0.86		0.89		0.85		0.94		0.91	

* Data File : D1903002

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Location : CALIFORNIA AVENUE — Site: IRVINE
Segment : ADOBE CIRCLE S TO ANTEATER DR — Date: 03/05/19
Client : STANTEC

Interval	NB				SB				Combined				Day: Tuesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	6	12	36	134	3	24	40	170	9	36	76	304	
12:15	0		38		14		38		14		76		
12:30	4		30		3		40		7		70		
12:45	2		30		4		52		6		82		
01:00	4	10	44	138	6	12	45	179	10	22	89	317	
01:15	4		28		0		42		4		70		
01:30	2		31		3		40		5		71		
01:45	0		35		3		52		3		87		
02:00	1	5	38	134	5	5	44	177	6	10	82	311	
02:15	2		30		0		39		2		69		
02:30	1		28		0		42		1		70		
02:45	1		38		0		52		1		90		
03:00	3	7	45	179	2	2	38	200	5	9	83	379	
03:15	1		44		0		56		1		100		
03:30	1		38		0		48		1		86		
03:45	2		52		0		58		2		110		
04:00	2	6	50	190	1	2	40	197	3	8	90	387	
04:15	1		44		0		42		1		86		
04:30	2		46		0		51		2		97		
04:45	1		50		1		64		2		114		
05:00	2	16	69	279	4	24	72	257	6	40	141	536	
05:15	1		78		4		65		5		143		
05:30	3		58		6		54		9		112		
05:45	10		74		10		66		20		140		
06:00	16	86	55	180	5	43	54	212	21	129	109	392	
06:15	19		50		8		42		27		92		
06:30	20		36		9		49		29		85		
06:45	31		39		21		67		52		106		
07:00	26	129	45	132	24	154	48	161	50	283	93	293	
07:15	30		30		34		46		64		76		
07:30	29		25		48		29		77		54		
07:45	44		32		48		38		92		70		
08:00	52	181	31	103	55	209	30	135	107	390	61	238	
08:15	52		32		52		38		104		70		
08:30	36		19		46		34		82		53		
08:45	41		21		56		33		97		54		
09:00	39	136	28	104	48	172	28	100	87	308	56	204	
09:15	32		25		48		28		80		53		
09:30	42		24		34		28		76		52		
09:45	23		27		42		16		65		43		
10:00	23	122	12	48	36	132	24	73	59	254	36	121	
10:15	24		14		27		14		51		28		
10:30	31		16		33		15		64		31		
10:45	44		6		36		20		80		26		
11:00	40	129	19	44	27	121	14	50	67	250	33	94	
11:15	28		6		30		10		58		16		
11:30	26		14		36		14		62		28		
11:45	35		5		28		12		63		17		
Totals	839		1,665		900		1,911		1,739		3,576		
Split%	48.2		46.6		51.8		53.4						
Day Totals		2,504				2,811				5,315			
Day Splits		47.1				52.9							
Peak Hour	07:45		05:00		08:00		05:00		08:00		05:00		
Volume	184		279		209		257		390		536		
Factor	0.88		0.89		0.93		0.89		0.91		0.94		

* Data File : D1903003

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: CAMPUS DRIVE

File Name : H1903001
Site Code : 00000000
Start Date : 3/5/2019

Groups Printed- Turning Movements

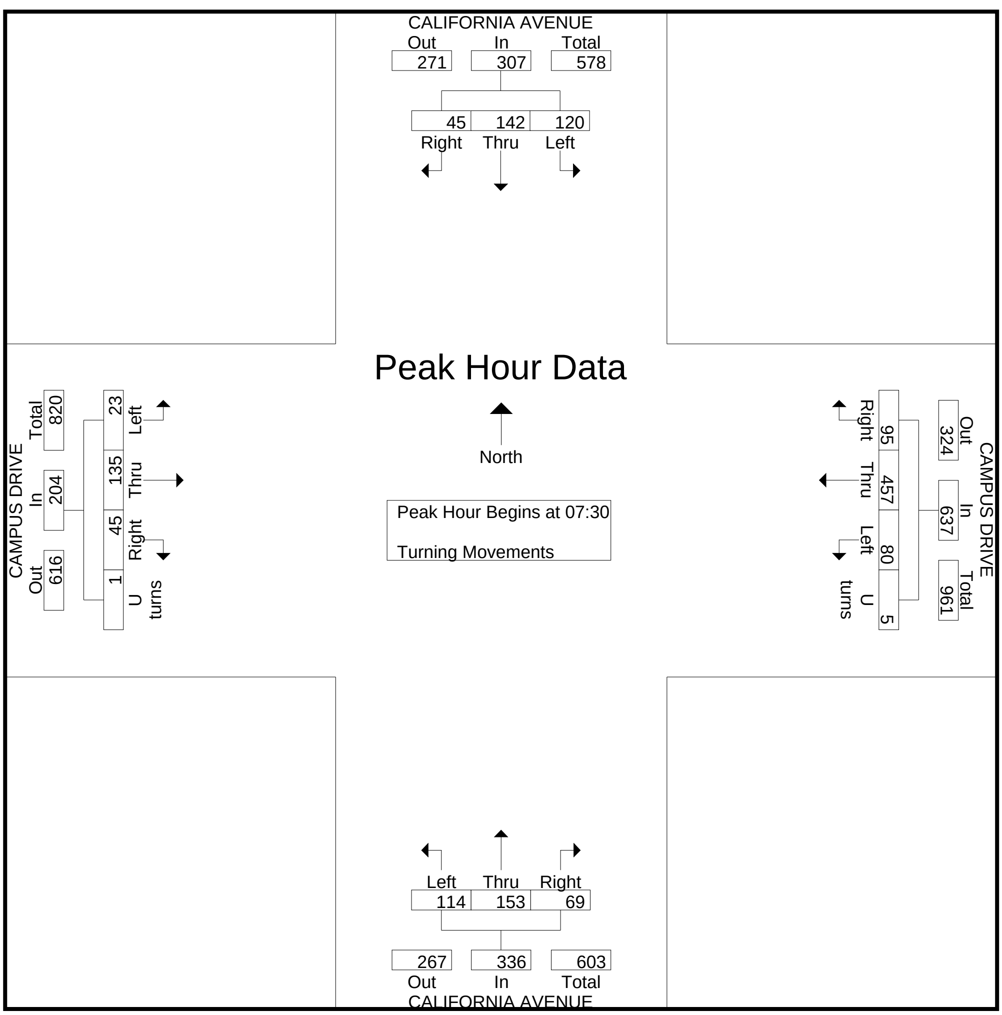
	CALIFORNIA AVENUE Southbound			CAMPUS DRIVE Westbound				CALIFORNIA AVENUE Northbound			CAMPUS DRIVE Eastbound				
Start Time	Right	Thru	Left	Right	Thru	Left	U turns	Right	Thru	Left	Right	Thru	Left	U turns	Int. Total
07:00	0	16	6	6	39	16	0	10	14	9	9	13	2	1	141
07:15	3	33	12	6	69	13	0	28	22	20	9	32	3	1	251
07:30	12	34	34	14	111	20	1	23	36	33	10	36	6	1	371
07:45	6	36	15	28	122	26	1	10	40	33	14	32	4	0	367
Total	21	119	67	54	341	75	2	71	112	95	42	113	15	3	1130
08:00	18	42	35	21	104	19	1	14	44	20	11	27	7	0	363
08:15	9	30	36	32	120	15	2	22	33	28	10	40	6	0	383
08:30	10	33	15	28	134	25	1	8	33	28	5	42	9	0	371
08:45	7	31	5	11	114	32	0	5	35	25	15	28	5	0	313
Total	44	136	91	92	472	91	4	49	145	101	41	137	27	0	1430
16:00	5	35	18	9	76	20	3	13	41	42	38	95	22	1	418
16:15	9	46	34	17	93	20	0	12	49	35	32	91	21	0	459
16:30	10	34	24	4	80	14	3	15	53	48	41	80	8	2	416
16:45	5	58	28	15	75	20	1	21	47	36	57	81	20	3	467
Total	29	173	104	45	324	74	7	61	190	161	168	347	71	6	1760
17:00	8	51	29	14	53	31	4	11	65	49	63	116	18	0	512
17:15	7	58	19	9	82	30	3	16	64	29	60	104	15	0	496
17:30	6	59	22	12	80	28	1	24	52	54	47	103	11	2	501
17:45	9	64	20	11	78	28	0	16	71	43	61	103	15	0	519
Total	30	232	90	46	293	117	8	67	252	175	231	426	59	2	2028
Grand Total	124	660	352	237	1430	357	21	248	699	532	482	1023	172	11	6348
Apprch %	10.9	58.1	31	11.6	69.9	17.5	1	16.8	47.3	36	28.6	60.6	10.2	0.7	
Total %	2	10.4	5.5	3.7	22.5	5.6	0.3	3.9	11	8.4	7.6	16.1	2.7	0.2	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: CAMPUS DRIVE

File Name : H1903001
Site Code : 00000000
Start Date : 3/5/2019
Page No : 2

	CALIFORNIA AVENUE Southbound				CAMPUS DRIVE Westbound					CALIFORNIA AVENUE Northbound				CAMPUS DRIVE Eastbound					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U turns	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:30																			
07:30	12	34	34	80	14	111	20	1	146	23	36	33	92	10	36	6	1	53	371
07:45	6	36	15	57	28	122	26	1	177	10	40	33	83	14	32	4	0	50	367
08:00	18	42	35	95	21	104	19	1	145	14	44	20	78	11	27	7	0	45	363
08:15	9	30	36	75	32	120	15	2	169	22	33	28	83	10	40	6	0	56	383
Total Volume	45	142	120	307	95	457	80	5	637	69	153	114	336	45	135	23	1	204	1484
% App. Total	14.7	46.3	39.1		14.9	71.7	12.6	0.8		20.5	45.5	33.9		22.1	66.2	11.3	0.5		
PHF	.625	.845	.833	.808	.742	.936	.769	.625	.900	.750	.869	.864	.913	.804	.844	.821	.250	.911	.969

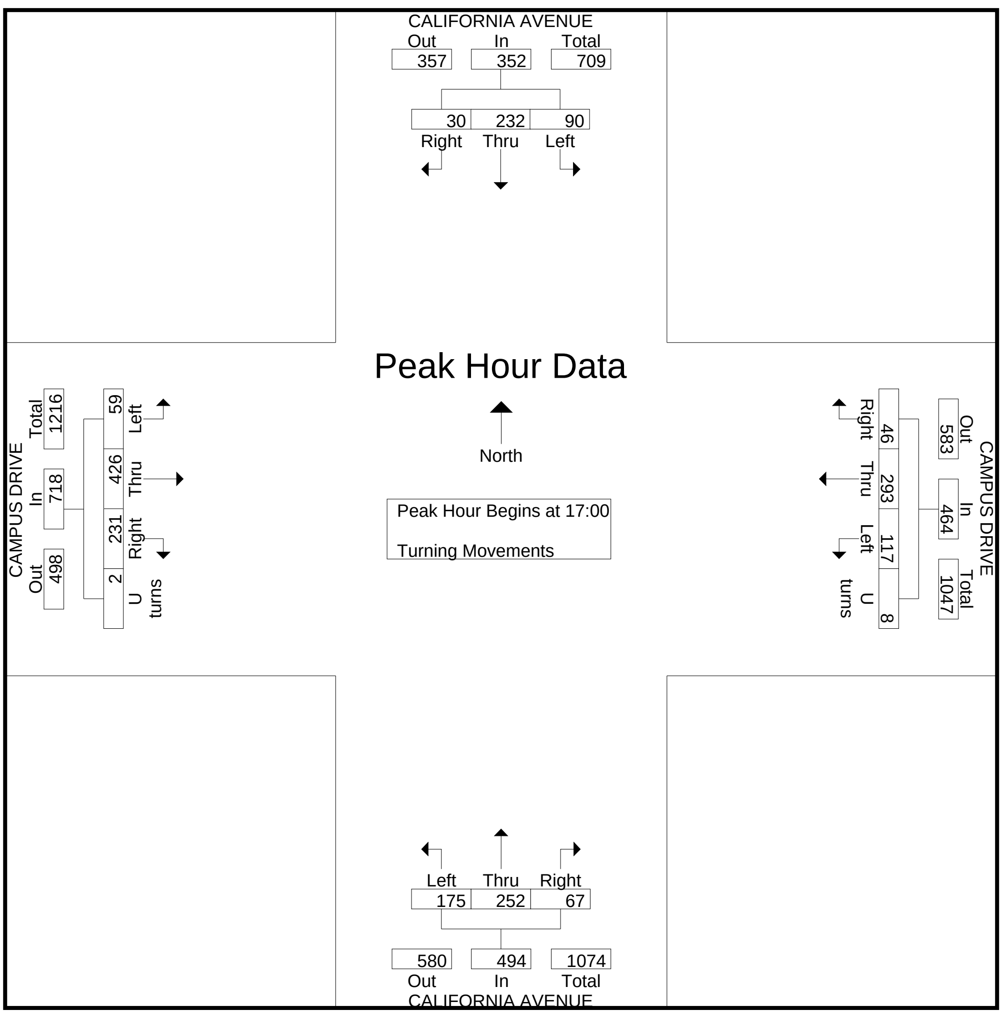


Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: CAMPUS DRIVE

File Name : H1903001
Site Code : 00000000
Start Date : 3/5/2019
Page No : 3

	CALIFORNIA AVENUE Southbound				CAMPUS DRIVE Westbound					CALIFORNIA AVENUE Northbound				CAMPUS DRIVE Eastbound					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U turns	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U turns	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 17:00																			
17:00	8	51	29	88	14	53	31	4	102	11	65	49	125	63	116	18	0	197	512
17:15	7	58	19	84	9	82	30	3	124	16	64	29	109	60	104	15	0	179	496
17:30	6	59	22	87	12	80	28	1	121	24	52	54	130	47	103	11	2	163	501
17:45	9	64	20	93	11	78	28	0	117	16	71	43	130	61	103	15	0	179	519
Total Volume	30	232	90	352	46	293	117	8	464	67	252	175	494	231	426	59	2	718	2028
% App. Total	8.5	65.9	25.6		9.9	63.1	25.2	1.7		13.6	51	35.4		32.2	59.3	8.2	0.3		
PHF	.833	.906	.776	.946	.821	.893	.944	.500	.935	.698	.887	.810	.950	.917	.918	.819	.250	.911	.977



Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ADOBE CIRCLE ROAD S

File Name : H1903002
Site Code : 00000000
Start Date : 3/5/2019
Page No : 1

Groups Printed- Turning Movements

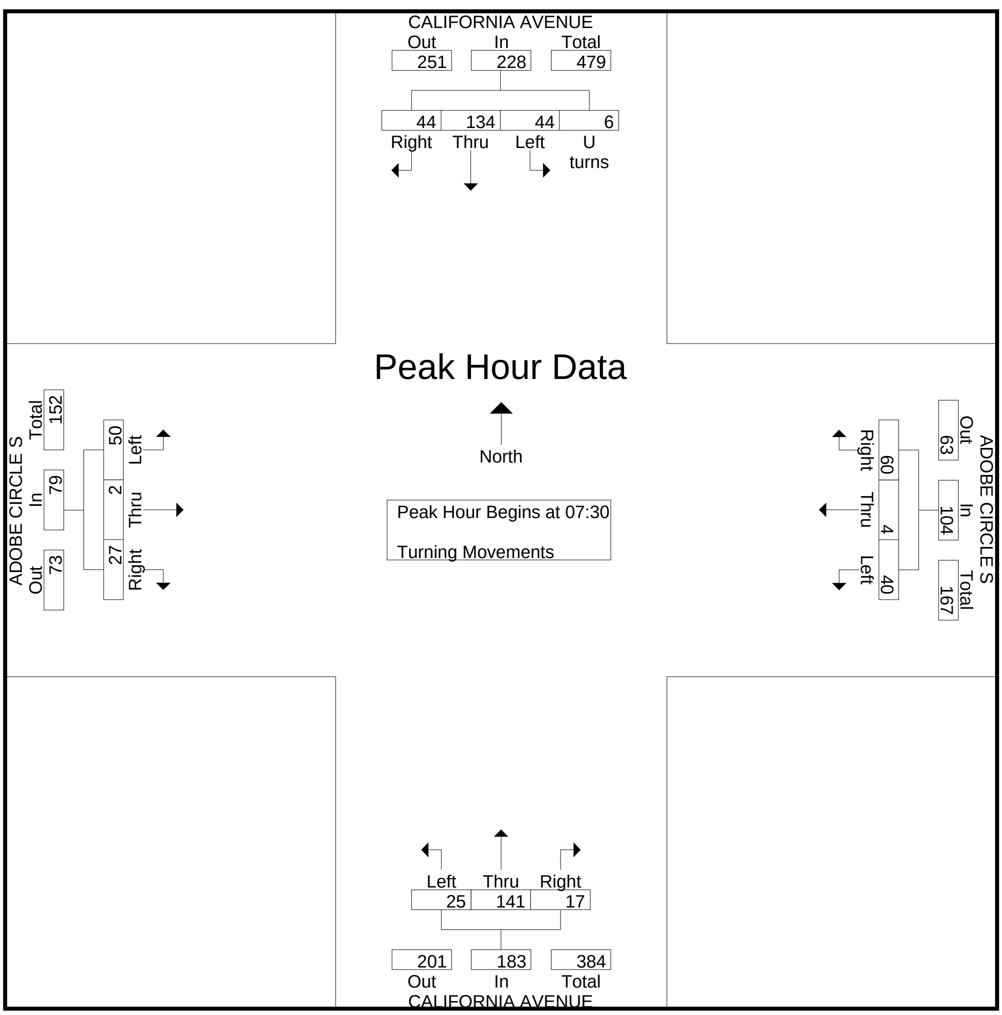
	CALIFORNIA AVENUE Southbound				ADOBE CIRCLE S Westbound			CALIFORNIA AVENUE Northbound			ADOBE CIRCLE S Eastbound			
Start Time	Right	Thru	Left	U turns	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	2	14	13	1	6	0	4	18	14	3	4	0	0	79
07:15	4	15	14	3	10	0	12	9	20	3	4	0	6	100
07:30	9	25	12	1	18	1	12	2	30	1	8	1	15	135
07:45	14	35	14	3	7	2	11	5	28	7	6	0	12	144
Total	29	89	53	8	41	3	39	34	92	14	22	1	33	458
08:00	10	41	10	0	13	1	6	8	37	9	10	1	14	160
08:15	11	33	8	2	22	0	11	2	46	8	3	0	9	155
08:30	11	32	8	0	10	2	5	3	27	7	7	1	8	121
08:45	12	39	10	2	14	1	6	10	25	8	16	1	10	154
Total	44	145	36	4	59	4	28	23	135	32	36	3	41	590
16:00	9	26	25	2	14	2	8	16	27	6	2	4	10	151
16:15	5	37	22	2	16	0	4	10	27	9	6	2	7	147
16:30	5	38	25	3	23	0	7	11	35	2	8	3	5	165
16:45	14	49	28	3	18	1	7	15	28	8	9	2	10	192
Total	33	150	100	10	71	3	26	52	117	25	25	11	32	655
17:00	15	44	35	3	30	2	9	14	52	10	15	4	14	247
17:15	10	48	52	6	20	0	10	25	47	12	11	4	9	254
17:30	14	39	38	4	23	2	11	13	42	7	7	1	9	210
17:45	15	47	37	3	26	0	6	15	56	9	11	1	9	235
Total	54	178	162	16	99	4	36	67	197	38	44	10	41	946
Grand Total	160	562	351	38	270	14	129	176	541	109	127	25	147	2649
Apprch %	14.4	50.6	31.6	3.4	65.4	3.4	31.2	21.3	65.5	13.2	42.5	8.4	49.2	
Total %	6	21.2	13.3	1.4	10.2	0.5	4.9	6.6	20.4	4.1	4.8	0.9	5.5	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ADOBE CIRCLE ROAD S

File Name : H1903002
Site Code : 00000000
Start Date : 3/5/2019

	CALIFORNIA AVENUE Southbound					ADOBE CIRCLE S Westbound				CALIFORNIA AVENUE Northbound				ADOBE CIRCLE S Eastbound				
Start Time	Right	Thru	Left	U turns	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:30																		
07:30	9	25	12	1	47	18	1	12	31	2	30	1	33	8	1	15	24	135
07:45	14	35	14	3	66	7	2	11	20	5	28	7	40	6	0	12	18	144
08:00	10	41	10	0	61	13	1	6	20	8	37	9	54	10	1	14	25	160
08:15	11	33	8	2	54	22	0	11	33	2	46	8	56	3	0	9	12	155
Total Volume	44	134	44	6	228	60	4	40	104	17	141	25	183	27	2	50	79	594
% App. Total	19.3	58.8	19.3	2.6		57.7	3.8	38.5		9.3	77	13.7		34.2	2.5	63.3		
PHF	.786	.817	.786	.500	.864	.682	.500	.833	.788	.531	.766	.694	.817	.675	.500	.833	.790	.928

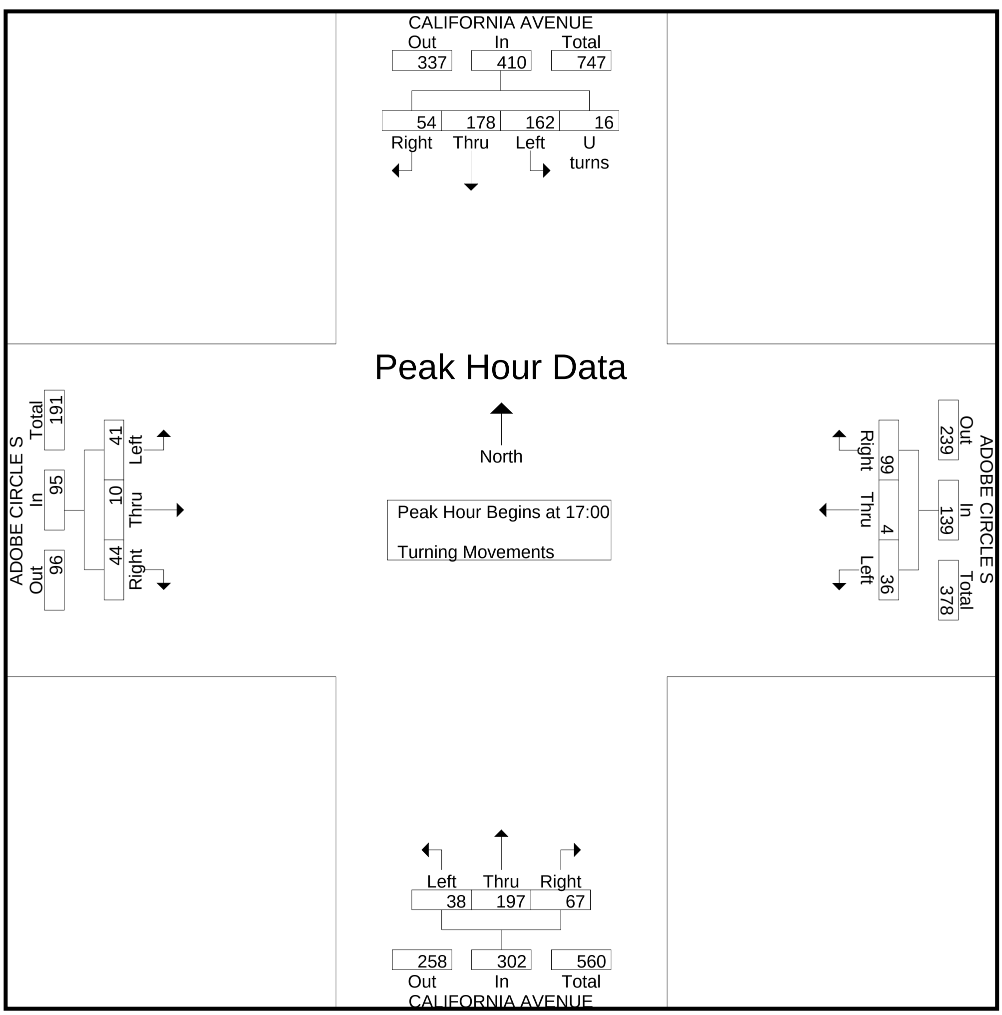


Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ADOBE CIRCLE ROAD S

File Name : H1903002
Site Code : 00000000
Start Date : 3/5/2019
Page No : 3

	CALIFORNIA AVENUE Southbound					ADOBE CIRCLE S Westbound				CALIFORNIA AVENUE Northbound				ADOBE CIRCLE S Eastbound				
Start Time	Right	Thru	Left	U turns	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 17:00																		
17:00	15	44	35	3	97	30	2	9	41	14	52	10	76	15	4	14	33	247
17:15	10	48	52	6	116	20	0	10	30	25	47	12	84	11	4	9	24	254
17:30	14	39	38	4	95	23	2	11	36	13	42	7	62	7	1	9	17	210
17:45	15	47	37	3	102	26	0	6	32	15	56	9	80	11	1	9	21	235
Total Volume	54	178	162	16	410	99	4	36	139	67	197	38	302	44	10	41	95	946
% App. Total	13.2	43.4	39.5	3.9		71.2	2.9	25.9		22.2	65.2	12.6		46.3	10.5	43.2		
PHF	.900	.927	.779	.667	.884	.825	.500	.818	.848	.670	.879	.792	.899	.733	.625	.732	.720	.931



Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ARROYO DRIVE

File Name : H1903003
Site Code : 00000000
Start Date : 3/5/2019
Page No : 1

Groups Printed- Turning Movements

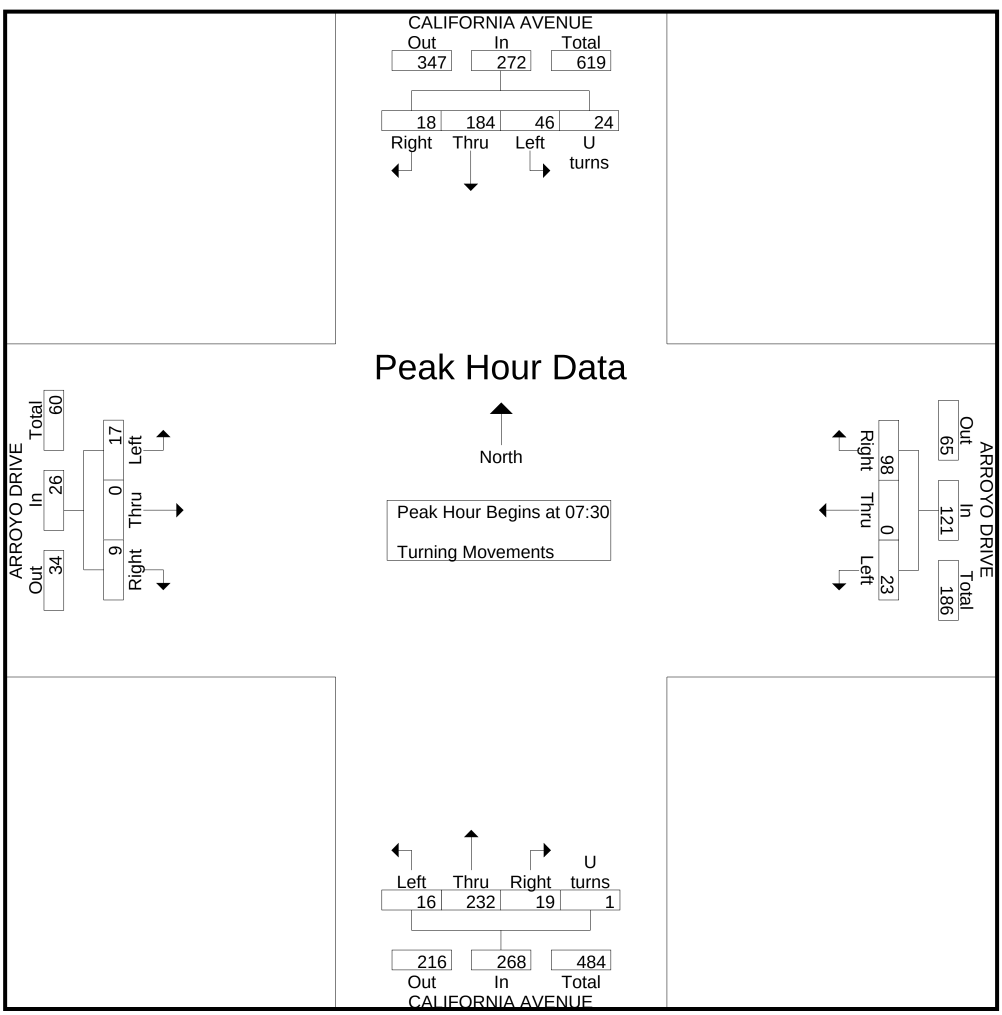
	CALIFORNIA AVENUE Southbound				ARROYO DRIVE Westbound			CALIFORNIA AVENUE Northbound				ARROYO DRIVE Eastbound			
Start Time	Right	Thru	Left	U turns	Right	Thru	Left	Right	Thru	Left	U turns	Right	Thru	Left	Int. Total
07:00	0	31	18	0	10	0	1	2	19	0	0	0	0	0	81
07:15	3	37	15	5	19	1	2	2	43	0	0	0	1	0	128
07:30	3	35	9	9	28	0	6	9	56	5	0	2	0	2	164
07:45	7	51	15	10	34	0	8	3	49	1	1	4	0	5	188
Total	13	154	57	24	91	1	17	16	167	6	1	6	1	7	561
08:00	6	46	11	4	19	0	6	5	52	5	0	0	0	5	159
08:15	2	52	11	1	17	0	3	2	75	5	0	3	0	5	176
08:30	3	41	9	6	17	0	5	0	45	2	0	4	0	4	136
08:45	4	59	8	4	18	1	4	3	49	2	1	2	0	3	158
Total	15	198	39	15	71	1	18	10	221	14	1	9	0	17	629
16:00	1	51	48	3	40	0	10	11	50	0	2	2	0	1	219
16:15	3	66	18	6	45	0	5	10	49	0	0	0	0	1	203
16:30	1	46	37	5	52	0	18	12	58	1	0	1	0	2	233
16:45	5	83	39	9	49	0	13	14	50	1	0	2	0	2	267
Total	10	246	142	23	186	0	46	47	207	2	2	5	0	6	922
17:00	3	84	44	8	42	0	13	14	84	4	0	1	0	4	301
17:15	5	103	57	7	42	0	8	8	69	2	0	2	0	4	307
17:30	7	78	56	12	42	0	12	5	72	7	1	4	0	8	304
17:45	2	92	59	7	57	0	11	14	89	1	0	4	1	6	343
Total	17	357	216	34	183	0	44	41	314	14	1	11	1	22	1255
Grand Total	55	955	454	96	531	2	125	114	909	36	5	31	2	52	3367
Apprch %	3.5	61.2	29.1	6.2	80.7	0.3	19	10.7	85.4	3.4	0.5	36.5	2.4	61.2	
Total %	1.6	28.4	13.5	2.9	15.8	0.1	3.7	3.4	27	1.1	0.1	0.9	0.1	1.5	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ARROYO DRIVE

File Name : H1903003
Site Code : 00000000
Start Date : 3/5/2019

	CALIFORNIA AVENUE Southbound					ARROYO DRIVE Westbound				CALIFORNIA AVENUE Northbound					ARROYO DRIVE Eastbound				
Start Time	Right	Thru	Left	U turns	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U turns	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:30																			
07:30	3	35	9	9	56	28	0	6	34	9	56	5	0	70	2	0	2	4	164
07:45	7	51	15	10	83	34	0	8	42	3	49	1	1	54	4	0	5	9	188
08:00	6	46	11	4	67	19	0	6	25	5	52	5	0	62	0	0	5	5	159
08:15	2	52	11	1	66	17	0	3	20	2	75	5	0	82	3	0	5	8	176
Total Volume	18	184	46	24	272	98	0	23	121	19	232	16	1	268	9	0	17	26	687
% App. Total	6.6	67.6	16.9	8.8		81	0	19		7.1	86.6	6	0.4		34.6	0	65.4		
PHF	.643	.885	.767	.600	.819	.721	.000	.719	.720	.528	.773	.800	.250	.817	.563	.000	.850	.722	.914



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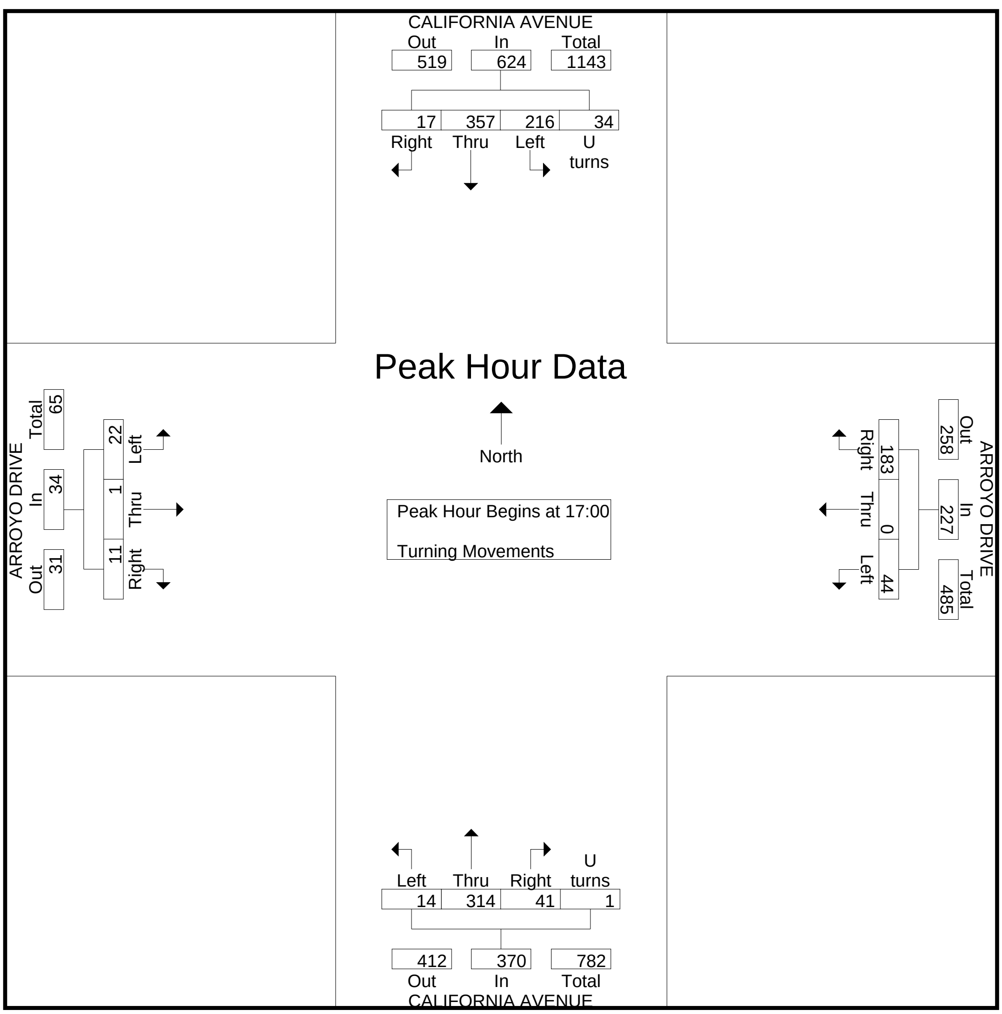
City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ARROYO DRIVE

File Name : H1903003
Site Code : 00000000
Start Date : 3/5/2019
Page No : 3

	CALIFORNIA AVENUE Southbound					ARROYO DRIVE Westbound				CALIFORNIA AVENUE Northbound					ARROYO DRIVE Eastbound				
Start Time	Right	Thru	Left	U turns	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U turns	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 17:00																			
17:00	3	84	44	8	139	42	0	13	55	14	84	4	0	102	1	0	4	5	301
17:15	5	103	57	7	172	42	0	8	50	8	69	2	0	79	2	0	4	6	307
17:30	7	78	56	12	153	42	0	12	54	5	72	7	1	85	4	0	8	12	304
17:45	2	92	59	7	160	57	0	11	68	14	89	1	0	104	4	1	6	11	343
Total Volume	17	357	216	34	624	183	0	44	227	41	314	14	1	370	11	1	22	34	1255
% App. Total	2.7	57.2	34.6	5.4		80.6	0	19.4		11.1	84.9	3.8	0.3		32.4	2.9	64.7		
PHF	.607	.867	.915	.708	.907	.803	.000	.846	.835	.732	.882	.500	.250	.889	.688	.250	.688	.708	.915



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City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ADOBE CIRCLE ROAD N

File Name : H1903004
Site Code : 00000000
Start Date : 3/5/2019
Page No : 1

Groups Printed- Turning Movements

	CALIFORNIA AVENUE Southbound			DEAD END Westbound			CALIFORNIA AVENUE Northbound			ADOBE CIRICLE ROAD N Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	5	43	0	0	0	0	0	32	0	3	0	0	83
07:15	4	51	0	0	0	0	0	68	3	9	0	0	135
07:30	11	49	0	0	0	0	0	88	11	18	0	0	177
07:45	9	64	0	0	0	0	0	86	8	12	0	0	179
Total	29	207	0	0	0	0	0	274	22	42	0	0	574
08:00	6	67	0	0	0	0	0	76	6	9	0	0	164
08:15	5	52	0	0	0	0	0	87	15	10	0	0	169
08:30	8	55	0	0	0	0	0	63	8	10	0	0	144
08:45	16	59	0	0	0	0	0	69	6	7	0	0	157
Total	35	233	0	0	0	0	0	295	35	36	0	0	634
16:00	6	93	0	0	0	0	0	94	2	18	0	0	213
16:15	13	80	0	0	0	0	0	100	4	12	0	0	209
16:30	6	84	0	0	0	0	0	120	4	15	0	0	229
16:45	9	110	0	0	0	0	0	106	5	14	0	0	244
Total	34	367	0	0	0	0	0	420	15	59	0	0	895
17:00	11	123	0	0	0	0	0	118	9	21	0	0	282
17:15	10	149	0	0	0	0	0	114	8	20	0	0	301
17:30	15	124	0	0	0	0	0	116	11	24	0	0	290
17:45	5	137	0	0	0	0	0	133	14	27	0	0	316
Total	41	533	0	0	0	0	0	481	42	92	0	0	1189
Grand Total	139	1340	0	0	0	0	0	1470	114	229	0	0	3292
Apprch %	9.4	90.6	0	0	0	0	0	92.8	7.2	100	0	0	
Total %	4.2	40.7	0	0	0	0	0	44.7	3.5	7	0	0	

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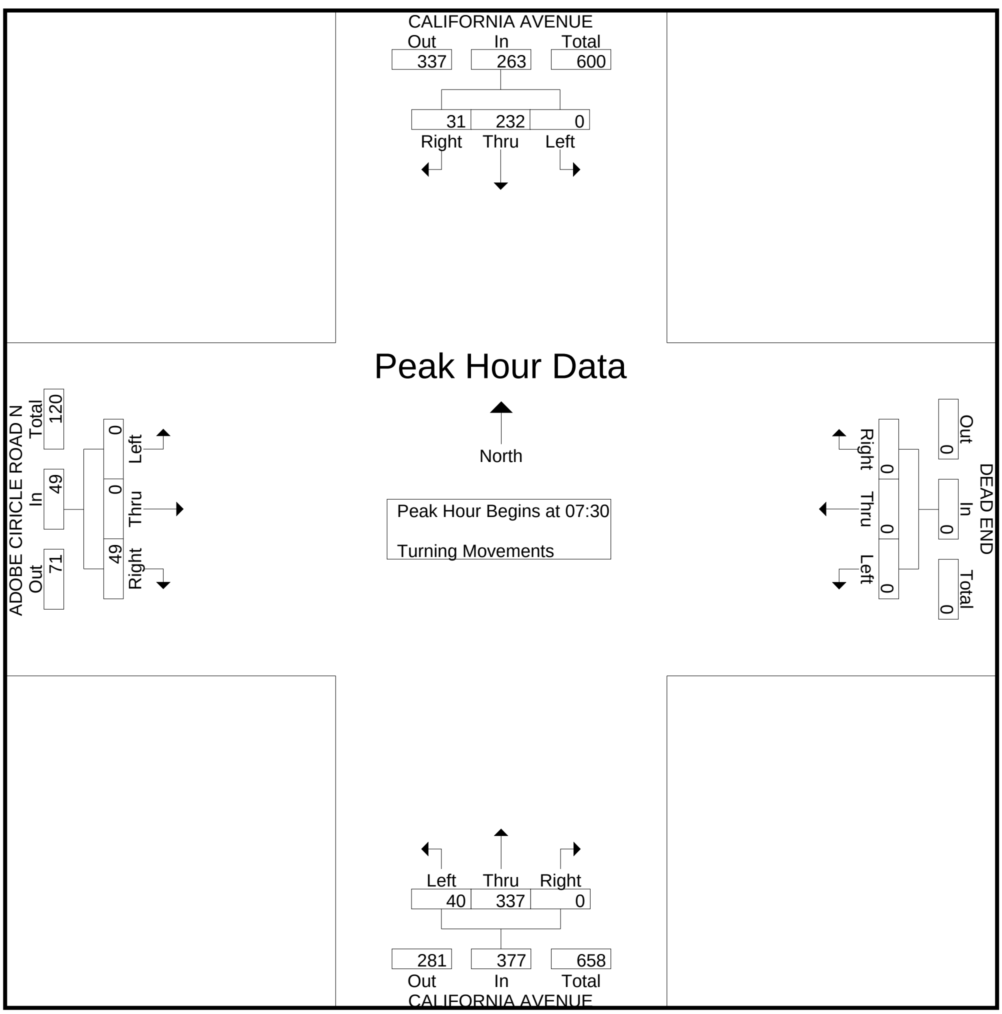
City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ADOBE CIRCLE ROAD N

File Name : H1903004
Site Code : 00000000
Start Date : 3/5/2019
Page No : 2

	CALIFORNIA AVENUE Southbound				DEAD END Westbound				CALIFORNIA AVENUE Northbound				ADOBE CIRICLE ROAD N Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	11	49	0	60	0	0	0	0	0	88	11	99	18	0	0	18	177
07:45	9	64	0	73	0	0	0	0	0	86	8	94	12	0	0	12	179
08:00	6	67	0	73	0	0	0	0	0	76	6	82	9	0	0	9	164
08:15	5	52	0	57	0	0	0	0	0	87	15	102	10	0	0	10	169
Total Volume	31	232	0	263	0	0	0	0	0	337	40	377	49	0	0	49	689
% App. Total	11.8	88.2	0		0	0	0		0	89.4	10.6		100	0	0		
PHF	.705	.866	.000	.901	.000	.000	.000	.000	.000	.957	.667	.924	.681	.000	.000	.681	.962



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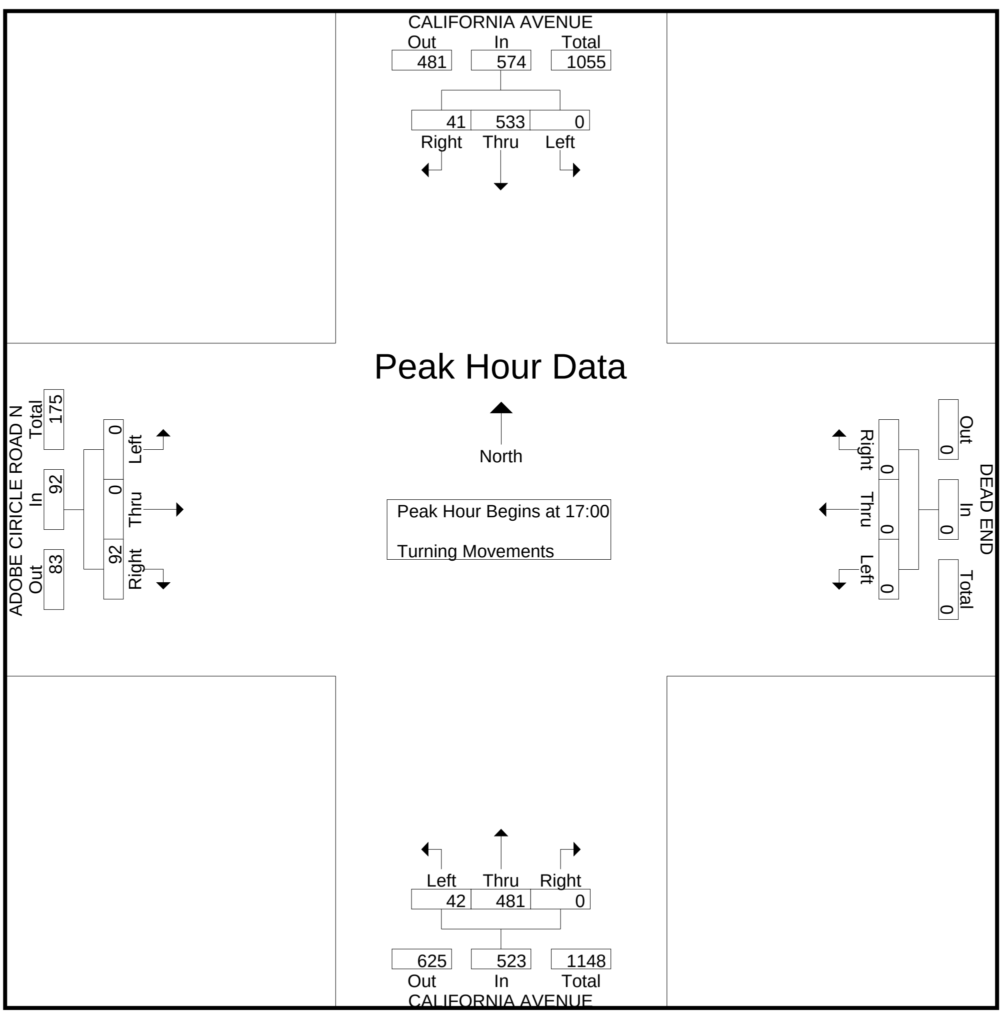
City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ADOBE CIRCLE ROAD N

File Name : H1903004
Site Code : 00000000
Start Date : 3/5/2019
Page No : 3

	CALIFORNIA AVENUE Southbound				DEAD END Westbound				CALIFORNIA AVENUE Northbound				ADOBE CIRICLE ROAD N Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	11	123	0	134	0	0	0	0	0	118	9	127	21	0	0	21	282
17:15	10	149	0	159	0	0	0	0	0	114	8	122	20	0	0	20	301
17:30	15	124	0	139	0	0	0	0	0	116	11	127	24	0	0	24	290
17:45	5	137	0	142	0	0	0	0	0	133	14	147	27	0	0	27	316
Total Volume	41	533	0	574	0	0	0	0	0	481	42	523	92	0	0	92	1189
% App. Total	7.1	92.9	0		0	0	0		0	92	8		100	0	0		
PHF	.683	.894	.000	.903	.000	.000	.000	.000	.000	.904	.750	.889	.852	.000	.000	.852	.941



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City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ANTEATER DRIVE

File Name : H1903005
Site Code : 00000000
Start Date : 3/5/2019
Page No : 1

Groups Printed- Turning Movements

	CALIFORNIA AVENUE Southbound			ANTEATER DRIVE Westbound			CALIFORNIA AVENUE Northbound			ANTEATER DRIVE Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	10	5	7	2	14	6	7	6	1	0	9	13	80
07:15	14	8	11	10	22	5	13	12	1	0	14	10	120
07:30	29	6	18	8	56	4	29	7	3	0	15	11	186
07:45	27	5	10	20	78	21	21	8	0	0	17	13	220
Total	80	24	46	40	170	36	70	33	5	0	55	47	606
08:00	20	5	33	14	58	14	20	16	1	1	22	19	223
08:15	25	6	17	29	63	16	6	18	1	0	10	6	197
08:30	23	5	19	21	79	15	14	6	0	1	18	7	208
08:45	30	5	21	20	63	7	9	12	1	0	16	10	194
Total	98	21	90	84	263	52	49	52	3	2	66	42	822
16:00	20	8	11	13	22	7	9	7	1	2	51	32	183
16:15	13	5	20	16	25	22	6	4	0	0	40	27	178
16:30	25	9	17	13	34	9	12	8	1	2	46	23	199
16:45	26	22	21	13	27	12	10	7	2	2	52	31	225
Total	84	44	69	55	108	50	37	26	4	6	189	113	785
17:00	21	14	32	16	19	10	17	10	2	4	76	40	261
17:15	18	11	38	13	25	20	22	14	0	3	72	46	282
17:30	20	9	25	21	29	18	10	10	2	0	51	27	222
17:45	25	10	27	23	24	23	11	11	0	1	90	34	279
Total	84	44	122	73	97	71	60	45	4	8	289	147	1044
Grand Total	346	133	327	252	638	209	216	156	16	16	599	349	3257
Apprch %	42.9	16.5	40.6	22.9	58.1	19	55.7	40.2	4.1	1.7	62.1	36.2	
Total %	10.6	4.1	10	7.7	19.6	6.4	6.6	4.8	0.5	0.5	18.4	10.7	

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City: IRVINE
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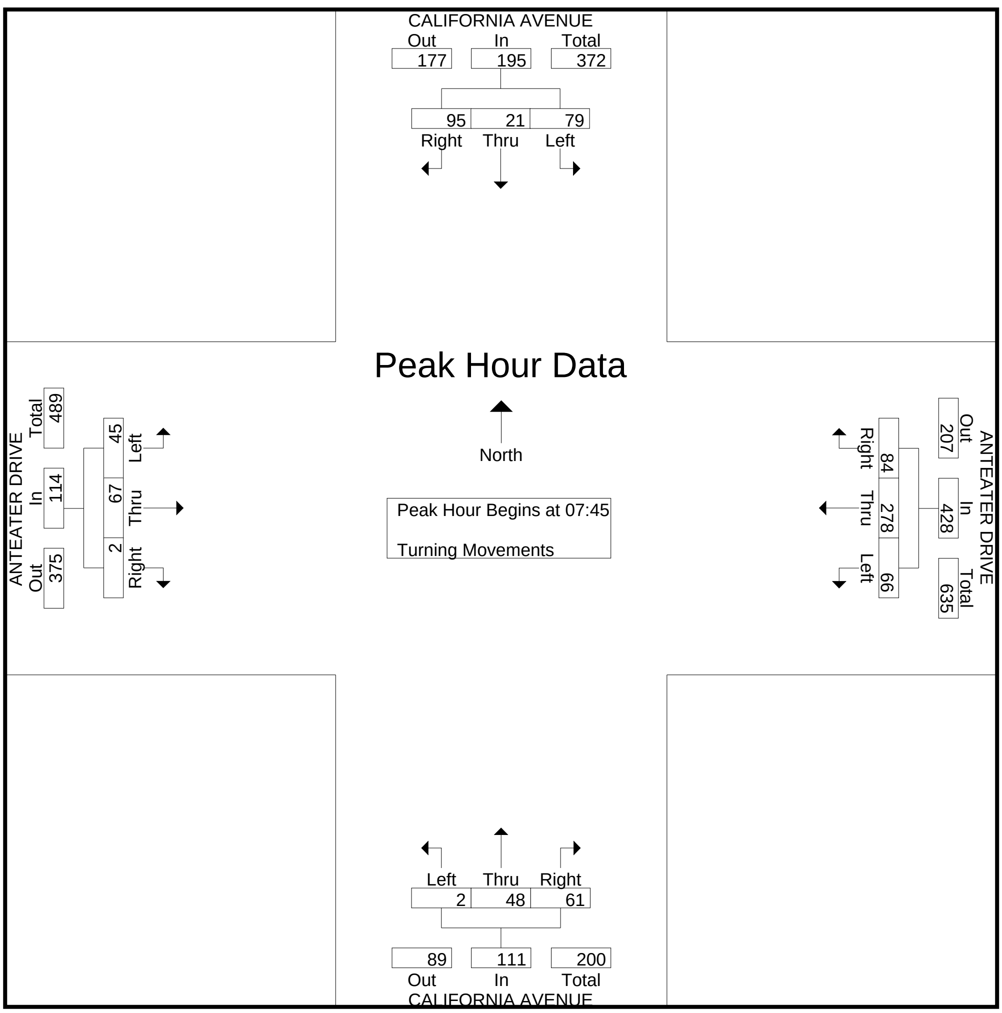
E-W Direction: ANTEATER DRIVE

File Name : H1903005
Site Code : 00000000
Start Date : 3/5/2019
Page No : 2

	CALIFORNIA AVENUE Southbound				ANTEATER DRIVE Westbound				CALIFORNIA AVENUE Northbound				ANTEATER DRIVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	27	5	10	42	20	78	21	119	21	8	0	29	0	17	13	30	220
08:00	20	5	33	58	14	58	14	86	20	16	1	37	1	22	19	42	223
08:15	25	6	17	48	29	63	16	108	6	18	1	25	0	10	6	16	197
08:30	23	5	19	47	21	79	15	115	14	6	0	20	1	18	7	26	208
Total Volume	95	21	79	195	84	278	66	428	61	48	2	111	2	67	45	114	848
% App. Total	48.7	10.8	40.5		19.6	65	15.4		55	43.2	1.8		1.8	58.8	39.5		
PHF	.880	.875	.598	.841	.724	.880	.786	.899	.726	.667	.500	.750	.500	.761	.592	.679	.951



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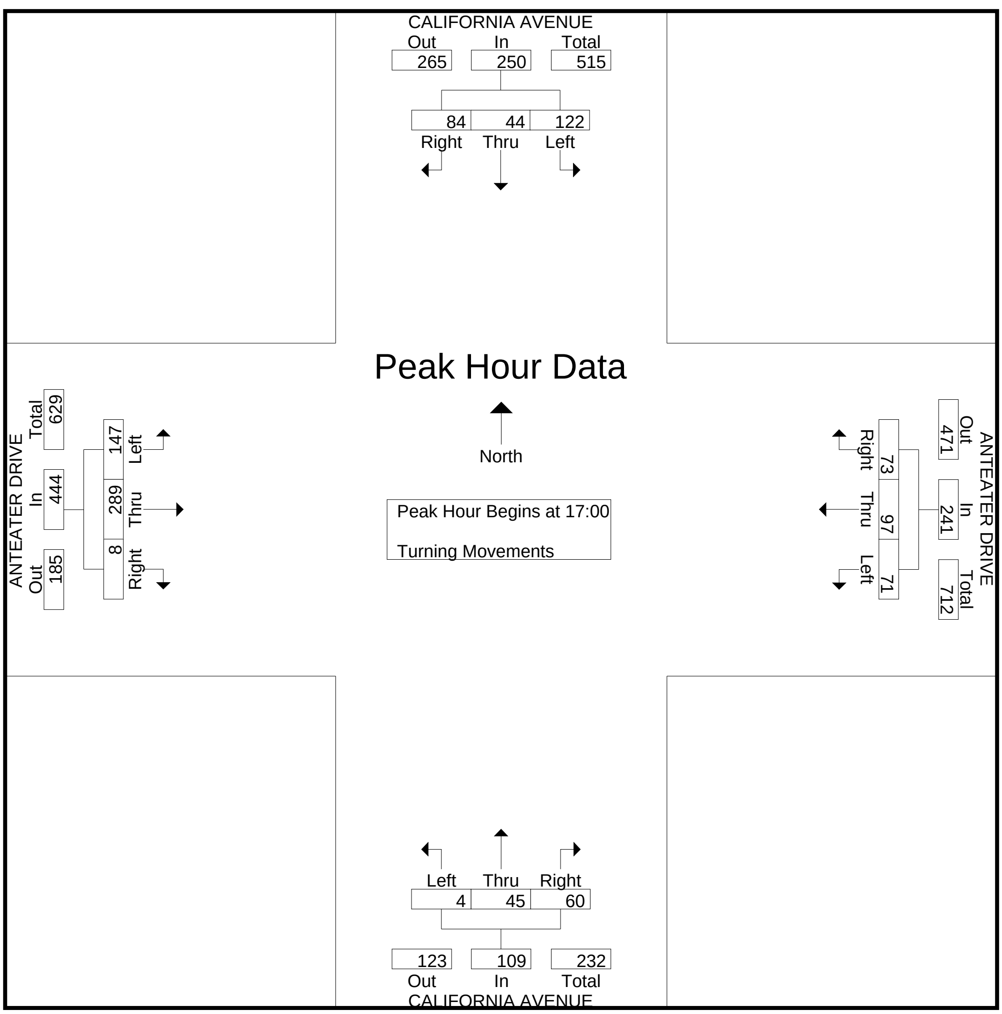
City: IRVINE
N-S Direction: CALIFORNIA AVENUE
E-W Direction: ANTEATER DRIVE

File Name : H1903005
Site Code : 00000000
Start Date : 3/5/2019

	CALIFORNIA AVENUE Southbound				ANTEATER DRIVE Westbound				CALIFORNIA AVENUE Northbound				ANTEATER DRIVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	21	14	32	67	16	19	10	45	17	10	2	29	4	76	40	120	261
17:15	18	11	38	67	13	25	20	58	22	14	0	36	3	72	46	121	282
17:30	20	9	25	54	21	29	18	68	10	10	2	22	0	51	27	78	222
17:45	25	10	27	62	23	24	23	70	11	11	0	22	1	90	34	125	279
Total Volume	84	44	122	250	73	97	71	241	60	45	4	109	8	289	147	444	1044
% App. Total	33.6	17.6	48.8		30.3	40.2	29.5		55	41.3	3.7		1.8	65.1	33.1		
PHF	.840	.786	.803	.933	.793	.836	.772	.861	.682	.804	.500	.757	.500	.803	.799	.888	.926



Appendix B ICU CALCULATION WORKSHEETS – VERANO 8 AND LRDP HOUSING AMENDMENT

Verano 8 ICU Worksheets

1. California & Campus

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	114	.07*	175	.10*
NBT	2	3400	153	.07	252	.09
NBR	0	0	69		67	
SBL	1	1700	120	.07	90	.05
SBT	1	1700	142	.08*	232	.14*
SBR	1	1700	45	.03	30	.02
EBL	1	1700	24	.01*	61	.04
EBT	2	3400	135	.04	426	.13*
EBR	d	1700	45	.03	231	.14
WBL	1	1700	85	.05	125	.07*
WBT	2	3400	457	.13*	293	.09
WBR	d	1700	95	.06	46	.03
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.34**		**.49**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	129	.08*	183	.11*
NBT	2	3400	172	.08	263	.10
NBR	0	0	88		78	
SBL	1	1700	120	.07	90	.05
SBT	1	1700	144	.08*	249	.15*
SBR	1	1700	45	.03	30	.02
EBL	1	1700	24	.01*	61	.04
EBT	2	3400	135	.04	426	.13*
EBR	d	1700	47	.03	245	.14
WBL	1	1700	87	.05	142	.08*
WBT	2	3400	457	.13*	293	.09
WBR	d	1700	95	.06	46	.03
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.35**		**.52**

2035 No Project (LRDP Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	230	.14*	300	.18*
NBT	2	3400	280	.12	300	.13
NBR	0	0	120		150	
SBL	1	1700	120	.07	130	.08
SBT	1	1700	210	.12*	300	.18*
SBR	1	1700	50	.03	40	.02
EBL	1	1700	60	.04*	100	.06
EBT	2	3400	250	.07	680	.20*
EBR	d	1700	110	.06	270	.16
WBL	1	1700	140	.08	160	.09*
WBT	2	3400	730	.21*	510	.15
WBR	d	1700	210	.12	50	.03
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.70**

2035 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	229	.13*	300	.18*
NBT	2	3400	278	.12	299	.13
NBR	0	0	118		149	
SBL	1	1700	120	.07	130	.08
SBT	1	1700	210	.12*	299	.18*
SBR	1	1700	50	.03	40	.02
EBL	1	1700	60	.04*	100	.06
EBT	2	3400	250	.07	680	.20*
EBR	d	1700	110	.06	270	.16
WBL	1	1700	140	.08	159	.09*
WBT	2	3400	730	.21*	510	.15
WBR	d	1700	210	.12	50	.03
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.70**

3. California & Arroyo

2035 No Project (LRDP Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	20		20	
NBT	2	3400	520	.18*	610	.21*
NBR	0	0	60		70	
SBL	0	0	80		230	
SBT	2	3400	380	.14*	530	.23*
SBR	0	0	20		20	
EBL	0	0	20		20	
EBT	1	1700	10	.02*	10	.02*
EBR	0	0	10		10	
WBL	0	0	60		70	
WBT	1	1700	10	.12*	10	.16*
WBR	0	0	140		200	
Clearance Interval				.05*		.05*
Note: Assumes N/S Split Phasing						
Note: Assumes E/W Split Phasing						
TOTAL CAPACITY UTILIZATION				**.51**		**.67**

2035 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	20		20	
NBT	2	3400	505	.17*	578	.20*
NBR	0	0	60		70	
SBL	0	0	80		230	
SBT	2	3400	380	.14*	528	.23*
SBR	0	0	20		20	
EBL	0	0	20		20	
EBT	1	1700	10	.02*	10	.02*
EBR	0	0	10		10	
WBL	0	0	60		70	
WBT	1	1700	10	.12*	10	.16*
WBR	0	0	140		200	
Clearance Interval				.05*		.05*
Note: Assumes N/S Split Phasing						
Note: Assumes E/W Split Phasing						
TOTAL CAPACITY UTILIZATION				**.50**		**.66**

4. California & Adobe Circle South

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	25	.01*	38	.02
NBT	2	3400	141	.05	197	.08*
NBR	0	0	17		67	
SBL	1	1700	50	.03	178	.10*
SBT	1	1700	134	.08*	178	.10
SBR	1	1700	44	.03	54	.03
EBL	0	0	50	{.03}*	41	{.02}*
EBT	1	1700	2	.05	10	.06
EBR	0	0	27		44	
WBL	0	0	40		36	
WBT	1	1700	4	.06*	4	.08*
WBR	0	0	60		99	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.23**		**.33**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02*	75	.04
NBT	2	3400	141	.05	197	.08*
NBR	0	0	17		67	
SBL	1	1700	77	.05	193	.11*
SBT	1	1700	176	.10*	201	.12
SBR	1	1700	44	.03	54	.03
EBL	0	0	77	{.05}*	56	{.03}*
EBT	1	1700	2	.06	10	.06
EBR	0	0	27		44	
WBL	0	0	40		36	
WBT	1	1700	4	.06*	4	.08*
WBR	0	0	60		99	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.28**		**.35**

2035 No Project (LRDP Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02	50	.03*
NBT	2	3400	360	.14*	130	.06
NBR	0	0	100		80	
SBL	1	1700	320	.19*	190	.11
SBT	1	1700	50	.03	290	.17*
SBR	1	1700	80	.05	130	.08
EBL	0	0	100	{.06}*	120	{.07}*
EBT	1	1700	30	.10	180	.21
EBR	0	0	40		50	
WBL	0	0	50		170	
WBT	1	1700	20	.08*	20	.34*
WBR	0	0	70		380	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.52**		**.66**

2035 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	35	.02	60	.04*
NBT	2	3400	350	.13*	112	.06
NBR	0	0	100		80	
SBL	1	1700	347	.20*	205	.12
SBT	1	1700	89	.05	298	.18*
SBR	1	1700	76	.04	95	.06
EBL	0	0	80	{.05}*	105	{.06}*
EBT	1	1700	30	.07	180	.19
EBR	0	0	12		41	
WBL	0	0	40		170	
WBT	1	1700	20	.08*	20	.34*
WBR	0	0	70		380	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.51**		**.67**

Housing Amendment ICU Worksheets

City of Irvine Intersections

84. MacArthur & Campus .

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	55	.03	176	.10
NBT	4	6800	1188	.17*	1676	.25*
NBR	1	1700	107	.06	84	.05
SBL	1	1700	381	.22*	571	.34*
SBT	4	6800	1265	.19	1456	.21
SBR	1	1700	230	.14	144	.08
EBL	2	3400	698	.21	400	.12*
EBT	3	5100	1391	.27*	615	.12
EBR	d	1700	102	.06	147	.09
WBL	2	3400	163	.05*	187	.06
WBT	3	5100	406	.08	1320	.26*
WBR	f		104		184	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.76**		**1.02**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	55	.03	176	.10
NBT	4	6800	1195	.18*	1673	.25*
NBR	1	1700	108	.06	83	.05
SBL	1	1700	380	.22*	568	.33*
SBT	4	6800	1254	.18	1455	.21
SBR	1	1700	229	.13	144	.08
EBL	2	3400	701	.21	403	.12*
EBT	3	5100	1395	.27*	619	.12
EBR	d	1700	102	.06	148	.09
WBL	2	3400	166	.05*	186	.05
WBT	3	5100	418	.08	1319	.26*
WBR	f		107		184	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**1.01**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	45	.01	160	.05
NBT	4	6800	1102	.16*	1662	.24*
NBR	1	1700	92	.05	76	.04
SBL	1	1700	397	.23*	594	.35*
SBT	3.5	8500	1286	.19	1477	.22
SBR	1.5		228		149	
EBL	2	3400	749	.22	430	.13*
EBT	3	5100	1381	.27*	610	.12
EBR	d	1700	99	.06	142	.08
WBL	2	3400	155	.05*	181	.05
WBT	3	5100	377	.07	1302	.26*
WBR	f		109		199	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.76**		**1.03**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	44	.01	163	.05
NBT	4	6800	1122	.17*	1655	.24*
NBR	1	1700	94	.06	77	.05
SBL	1	1700	407	.24*	597	.35*
SBT	3.5	8500	1277	.19	1487	.22
SBR	1.5		226		152	
EBL	2	3400	745	.22	430	.13*
EBT	3	5100	1379	.27*	616	.12
EBR	d	1700	96	.06	144	.08
WBL	2	3400	157	.05*	179	.05
WBT	3	5100	380	.07	1305	.26*
WBR	f		113		195	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.78**		**1.03**

100. Von Karman & Main

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	201	.06*	567	.17
NBT	2	3400	605	.18	1199	.35*
NBR	1	1700	154	.09	605	.36
SBL	1	1700	101	.06	157	.09*
SBT	2	3400	1188	.35*	628	.18
SBR	1	1700	381	.22	334	.20
EBL	2	3400	291	.09*	379	.11
EBT	3	5100	766	.15	1671	.33*
EBR	f		672		279	
WBL	2	3400	504	.15	133	.04*
WBT	3	5100	982	.22*	1122	.25
WBR	0	0	144		165	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**.86**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	201	.06*	564	.17
NBT	2	3400	605	.18	1202	.35*
NBR	1	1700	154	.09	604	.36
SBL	1	1700	101	.06	158	.09*
SBT	2	3400	1187	.35*	627	.18
SBR	1	1700	382	.22	335	.20
EBL	2	3400	292	.09*	381	.11
EBT	3	5100	766	.15	1679	.33*
EBR	f		672		280	
WBL	2	3400	506	.15	133	.04*
WBT	3	5100	990	.22*	1120	.25
WBR	0	0	145		167	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**.86**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	225	.07*	475	.14
NBT	2	3400	718	.21	1135	.33*
NBR	1	1700	212	.12	543	.32
SBL	1	1700	116	.07	147	.09*
SBT	2	3400	1126	.33*	713	.21
SBR	1	1700	353	.21	292	.17
EBL	2	3400	244	.07	374	.11
EBT	3	5100	742	.15*	1570	.31*
EBR	f		539		319	
WBL	2	3400	425	.13*	168	.05*
WBT	3	5100	812	.18	1083	.25
WBR	0	0	127		181	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.73**		**.83**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	222	.07*	474	.14
NBT	2	3400	717	.21	1135	.33*
NBR	1	1700	211	.12	543	.32
SBL	1	1700	117	.07	148	.09*
SBT	2	3400	1120	.33*	721	.21
SBR	1	1700	352	.21	293	.17
EBL	2	3400	244	.07	374	.11
EBT	3	5100	742	.15*	1569	.31*
EBR	f		534		320	
WBL	2	3400	426	.13*	169	.05*
WBT	3	5100	815	.19	1082	.25
WBR	0	0	129		181	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.73**		**.83**

105. Von Karman & Campus

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	22	.01	85	.05*
NBT	2	3400	906	.27*	742	.22
NBR	f		89		213	
SBL	1	1700	99	.06*	208	.12
SBT	2	3400	679	.24	946	.38*
SBR	0	0	125		345	
EBL	1	1700	397	.23*	199	.12*
EBT	2	3400	774	.23	721	.21
EBR	f		97		101	
WBL	1	1700	127	.07	115	.07
WBT	2	3400	384	.15*	853	.29*
WBR	0	0	111		141	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.76**		**.89**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	23	.01	86	.05*
NBT	2	3400	905	.27*	745	.22
NBR	f		89		211	
SBL	1	1700	97	.06*	206	.12
SBT	2	3400	681	.24	951	.38*
SBR	0	0	126		343	
EBL	1	1700	395	.23*	203	.12*
EBT	2	3400	773	.23	724	.21
EBR	f		99		104	
WBL	1	1700	130	.08	116	.07
WBT	2	3400	392	.15*	851	.29*
WBR	0	0	110		142	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.76**		**.89**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	14	.01	69	.04*
NBT	2	3400	842	.25*	724	.21
NBR	f		106		210	
SBL	1	1700	192	.11*	242	.14
SBT	2	3400	748	.26	906	.36*
SBR	0	0	128		329	
EBL	1	1700	356	.21*	200	.12*
EBT	2	3400	892	.26	728	.21
EBR	f		64		85	
WBL	1	1700	128	.08	119	.07
WBT	2	3400	358	.15*	882	.31*
WBR	0	0	153		177	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**.88**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	14	.01	70	.04*
NBT	2	3400	851	.25*	724	.21
NBR	f		107		210	
SBL	1	1700	192	.11*	243	.14
SBT	2	3400	748	.26	907	.36*
SBR	0	0	128		332	
EBL	1	1700	357	.21*	202	.12*
EBT	2	3400	891	.26	737	.22
EBR	f		64		86	
WBL	1	1700	128	.08	118	.07
WBT	2	3400	358	.15*	878	.31*
WBR	0	0	153		174	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**.88**

143. Jamboree & I-405 NB Ramps

Long-Range IY No Project w LRIY lanes

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	0	0	0		0	
NBT	3	5100	2433	.48*	3450	.68*
NBR	f		931		950	
SBL	0	0	0		0	
SBT	4	6800	2033	.30	2345	.34
SBR	f		1522		990	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1671	.33*	1045	.20*
WBT	0	0	0		0	
WBR	f		801		540	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.86**		**.93**

Long-Range IY With Project w LRIY lanes

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	0	0	0		0	
NBT	3	5100	2442	.48*	3440	.67*
NBR	f		930		950	
SBL	0	0	0		0	
SBT	4	6800	2026	.30	2345	.34
SBR	f		1520		980	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1674	.33*	1055	.21*
WBT	0	0	0		0	
WBR	f		798		540	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.86**		**.93**

Buildout No Project w buildout lanes

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	0	0	0		0	
NBT	3	5100	2210	.43*	3307	.65*
NBR	f		670		630	
SBL	0	0	0		0	
SBT	4	6800	2110	.31	2266	.33
SBR	f		1420		970	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1700	.33*	1224	.24*
WBT	0	0	0		0	
WBR	f		890		623	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.81**		**.94**

Buildout With Project w buildout lanes

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	0	0	0		0	
NBT	3	5100	2220	.44*	3301	.65*
NBR	f		670		630	
SBL	0	0	0		0	
SBT	4	6800	2109	.31	2266	.33
SBR	f		1420		970	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1701	.33*	1214	.24*
WBT	0	0	0		0	
WBR	f		900		629	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.82**		**.94**

144. Jamboree & I-405 SB Ramps

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2278	.45	3260	.64*
NBR	f		660		1420	
SBL	0	0	0		0	
SBT	4	6800	3392	.50*	2787	.41
SBR	f		290		640	
EBL	2	3400	1182	.35*	1190	.35*
EBT	0	0	0		0	
EBR	2	3400	1958	.58	1173	.35
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.23*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.13**		**1.04**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2297	.45	3249	.64*
NBR	f		661		1421	
SBL	0	0	0		0	
SBT	4	6800	3391	.50*	2796	.41
SBR	f		280		641	
EBL	2	3400	1176	.35*	1195	.35*
EBT	0	0	0		0	
EBR	2	3400	1964	.58	1178	.35
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.23*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.13**		**1.04**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2005	.39	2823	.55*
NBR	f		792		1500	
SBL	0	0	0		0	
SBT	4	6800	3409	.50*	2823	.42
SBR	f		366		700	
EBL	2.5		1010	.30*	1077	{.24}*
EBT	0	8500	0		0	{.24}
EBR	2.5		1678	.33	1087	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.03*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.88**		**.84**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2015	.40	2835	.56*
NBR	f		793		1500	
SBL	0	0	0		0	
SBT	4	6800	3417	.50*	2819	.41
SBR	f		366		700	
EBL	2.5		1014	.30*	1065	{.23}*
EBT	0	8500	0		0	{.23}
EBR	2.5		1675	.33	1091	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.03*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.88**		**.84**

145. Jamboree & Michelson

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	189	.11	113	.07
NBT	4	6800	1436	.21*	2492	.37*
NBR	1	1700	394	.23	405	.24
SBL	2	3400	1391	.41*	990	.29*
SBT	4	6800	2441	.36	2242	.33
SBR	f		1407		459	
EBL	2	3400	220	.06*	715	.21
EBT	2	3400	236	.07	705	.21*
EBR	1	1700	53	.03	100	.06
WBL	2	3400	358	.11	478	.14*
WBT	2	3400	556	.16*	368	.11
WBR	f		936		1353	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.89**		**1.06**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	190	.11	112	.07
NBT	4	6800	1446	.21*	2487	.37*
NBR	1	1700	394	.23	404	.24
SBL	2	3400	1391	.41*	1000	.29*
SBT	4	6800	2447	.36	2253	.33
SBR	f		1413		461	
EBL	2	3400	221	.07*	716	.21
EBT	2	3400	236	.07	706	.21*
EBR	1	1700	53	.03	100	.06
WBL	2	3400	360	.11	477	.14*
WBT	2	3400	557	.16*	367	.11
WBR	f		943		1357	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.90**		**1.06**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	207	.12	139	.08
NBT	4	6800	1529	.22*	2375	.35*
NBR	1	1700	407	.24	404	.24
SBL	2	3400	1222	.36*	898	.26*
SBT	4	6800	2374	.35	2220	.33
SBR	f		1309		515	
EBL	2	3400	405	.12*	735	.22
EBT	2	3400	421	.12	758	.22*
EBR	1	1700	105	.06	117	.07
WBL	2	3400	361	.11	513	.15*
WBT	2	3400	534	.16*	447	.13
WBR	f		877		1270	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.91**		**1.03**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	208	.12	140	.08
NBT	4	6800	1534	.23*	2376	.35*
NBR	1	1700	408	.24	402	.24
SBL	2	3400	1219	.36*	893	.26*
SBT	4	6800	2364	.35	2220	.33
SBR	f		1307		520	
EBL	2	3400	408	.12*	737	.22
EBT	2	3400	425	.13	755	.22*
EBR	1	1700	106	.06	118	.07
WBL	2	3400	362	.11	512	.15*
WBT	2	3400	538	.16*	450	.13
WBR	f		881		1267	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.92**		**1.03**

146. Jamboree & Dupont

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	169	.10*	111	.07*
NBT	4	6800	1722	.25	2414	.36
NBR	1	1700	18	.01	37	.02
SBL	1	1700	76	.04	157	.09
SBT	3	5100	2012	.39*	2324	.46*
SBR	d	1700	314	.18	167	.10
EBL	2	3400	81	.02	202	.06
EBT	1	1700	56	.08*	96	.19*
EBR	0	0	73		222	
WBL	1	1700	26	.02*	19	.01*
WBT	2	3400	57	.03	52	.03
WBR	0	0	166	.10	98	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.78**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	175	.10*	109	.06*
NBT	4	6800	1734	.26	2407	.35
NBR	1	1700	18	.01	36	.02
SBL	1	1700	76	.04	158	.09
SBT	3	5100	2033	.40*	2331	.46*
SBR	d	1700	316	.19	169	.10
EBL	2	3400	80	.02	204	.06
EBT	1	1700	56	.08*	96	.19*
EBR	0	0	74		221	
WBL	1	1700	27	.02*	19	.01*
WBT	2	3400	60	.04	52	.03
WBR	0	0	171	.10	99	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.77**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	170	.10*	113	.07*
NBT	4	6800	1659	.24	2335	.34
NBR	1	1700	14	.01	34	.02
SBL	1	1700	65	.04	158	.09
SBT	3	5100	1944	.38*	2323	.46*
SBR	d	1700	329	.19	186	.11
EBL	2	3400	139	.04	236	.07
EBT	1	1700	81	.12*	108	.21*
EBR	0	0	120		247	
WBL	1	1700	26	.02*	20	.01*
WBT	2	3400	62	.04	61	.04
WBR	0	0	172	.10	109	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.80**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	174	.10*	113	.07*
NBT	4	6800	1664	.24	2335	.34
NBR	1	1700	15	.01	34	.02
SBL	1	1700	64	.04	158	.09
SBT	3	5100	1939	.38*	2323	.46*
SBR	d	1700	335	.20	186	.11
EBL	2	3400	139	.04	236	.07
EBT	1	1700	81	.12*	108	.21*
EBR	0	0	120		247	
WBL	1	1700	25	.01*	20	.01*
WBT	2	3400	62	.04	61	.04
WBR	0	0	171	.10	109	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.66**		**.80**

147. Jamboree & Campus

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	161	.05*	119	.04*
NBT	4	6800	1621	.26	2090	.36
NBR	0	0	156		386	
SBL	2	3400	288	.08	215	.06
SBT	3	5100	1763	.37*	2009	.46*
SBR	0	0	111		361	
EBL	2	3400	255	.08	310	.09*
EBT	2	3400	566	.17*	729	.21
EBR	f		79		250	
WBL	2	3400	508	.15*	251	.07
WBT	2	3400	368	.11	630	.19*
WBR	1	1700	144	.08	300	.18
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.79**		**.83**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	165	.05*	119	.04*
NBT	4	6800	1633	.26	2078	.36
NBR	0	0	153		388	
SBL	2	3400	285	.08	218	.06
SBT	3	5100	1776	.37*	2015	.47*
SBR	0	0	115		362	
EBL	2	3400	260	.08	312	.09
EBT	2	3400	561	.17*	744	.22*
EBR	f		80		253	
WBL	2	3400	514	.15*	252	.07*
WBT	2	3400	381	.11	630	.19
WBR	1	1700	147	.09	299	.18
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.79**		**.85**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	152	.04	100	.03
NBT	4	6800	1590	.27*	1938	.35*
NBR	0	0	241		441	
SBL	2	3400	357	.11*	256	.08*
SBT	4	6800	1704	.26	2045	.35
SBR	0	0	84		315	
EBL	2	3400	204	.06	280	.08
EBT	2	3400	712	.21*	813	.24*
EBR	f		78		238	
WBL	2	3400	678	.20*	346	.10*
WBT	2	3400	384	.11	745	.22
WBR	1	1700	156	.09	392	.23
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.82**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	150	.04	100	.03
NBT	4	6800	1591	.27*	1946	.35*
NBR	0	0	246		444	
SBL	2	3400	358	.11*	257	.08*
SBT	4	6800	1699	.26	2045	.35
SBR	0	0	82		315	
EBL	2	3400	198	.06	282	.08
EBT	2	3400	706	.21*	819	.24*
EBR	f		77		240	
WBL	2	3400	705	.21*	346	.10*
WBT	2	3400	388	.11	744	.22
WBR	1	1700	160	.09	392	.23
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.85**		**.82**

148. Jamboree & Birch

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	249	.15*	60	.04
NBT	3	5100	1645	.32	2299	.45*
NBR	0	0	3		0	
SBL	1	1700	6	.00	6	.00
SBT	3	5100	1942	.38*	1440	.28
SBR	f		471		1070	
EBL	1.5		185		401	
EBT	0.5	3400	3	.06*	1	.12*
EBR	f		68		190	
WBL	0	0	0		0	
WBT	1	1700	0	.00*	0	.00*
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						
TOTAL CAPACITY UTILIZATION				**.64**		**.62**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	246	.14*	60	.04
NBT	3	5100	1654	.32	2294	.45*
NBR	0	0	3		0	
SBL	1	1700	6	.00	6	.00
SBT	3	5100	1953	.38*	1443	.28
SBR	f		474		1072	
EBL	1.5		186		401	
EBT	0.5	3400	3	.06*	1	.12*
EBR	f		67		190	
WBL	0	0	0		0	
WBT	1	1700	0	.00*	0	.00*
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						
TOTAL CAPACITY UTILIZATION				**.63**		**.62**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	283	.17*	73	.04
NBT	3	5100	1634	.32	2213	.43*
NBR	0	0	3		0	
SBL	1	1700	6	.00	6	.00
SBT	3	5100	1995	.39*	1458	.29
SBR	f		507		1177	
EBL	1.5		236		367	
EBT	0.5	3400	3	.07*	1	.11*
EBR	f		95		202	
WBL	0	0	0		0	
WBT	1	1700	0	.00*	0	.00*
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						
TOTAL CAPACITY UTILIZATION				**.68**		**.59**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	278	.16*	72	.04
NBT	3	5100	1636	.32	2215	.43*
NBR	0	0	3		0	
SBL	1	1700	6	.00	6	.00
SBT	3	5100	2014	.39*	1456	.29
SBR	f		512		1178	
EBL	1.5		244		375	
EBT	0.5	3400	3	.07*	1	.11*
EBR	f		96		204	
WBL	0	0	0		0	
WBT	1	1700	0	.00*	0	.00*
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						
TOTAL CAPACITY UTILIZATION				**.67**		**.59**

149. Jamboree & Fairchild

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	1	.00	39	.02
NBT	3	5100	1374	.28*	1801	.36*
NBR	0	0	72		20	
SBL	2	3400	411	.12*	212	.06*
SBT	4	6800	1658	.24	2180	.32
SBR	d	1700	1	.00	5	.00
EBL	1	1700	26	.02	51	.03
EBT	1	1700	28	.04*	58	.08*
EBR	0	0	37		72	
WBL	1	1700	29	.02*	79	.05*
WBT	1	1700	1	.00	6	.00
WBR	1	1700	385	.23	537	.32
Right Turn Adjustment			WBR	.10*	WBR	.17*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.77**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	1	.00	39	.02
NBT	3	5100	1369	.28*	1810	.36*
NBR	0	0	70		20	
SBL	2	3400	413	.12*	212	.06*
SBT	4	6800	1664	.24	2180	.32
SBR	d	1700	1	.00	5	.00
EBL	1	1700	26	.02	51	.03
EBT	1	1700	27	.04*	58	.08*
EBR	0	0	37		72	
WBL	1	1700	29	.02*	78	.05*
WBT	1	1700	1	.00	6	.00
WBR	1	1700	395	.23	529	.31
Right Turn Adjustment			WBR	.10*	WBR	.16*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.76**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	1	.00	39	.02
NBT	3	5100	1573	.32*	1788	.35*
NBR	0	0	75		16	
SBL	2	3400	399	.12*	185	.05*
SBT	4	6800	1687	.25	2323	.34
SBR	d	1700	1	.00	5	.00
EBL	1	1700	27	.02	43	.03
EBT	1	1700	26	.04*	39	.06*
EBR	0	0	37		59	
WBL	1	1700	26	.02*	68	.04*
WBT	1	1700	1	.00	6	.00
WBR	1	1700	360	.21	480	.28
Right Turn Adjustment			WBR	.08*	WBR	.17*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.72**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	1	.00	31	.02
NBT	3	5100	1571	.32*	1800	.36*
NBR	0	0	73		15	
SBL	2	3400	401	.12*	186	.05*
SBT	4	6800	1708	.25	2318	.34
SBR	d	1700	1	.00	4	.00
EBL	1	1700	27	.02	44	.03
EBT	1	1700	26	.04*	39	.06*
EBR	0	0	37		58	
WBL	1	1700	25	.01*	65	.04*
WBT	1	1700	1	.00	4	.00
WBR	1	1700	361	.21	476	.28
Right Turn Adjustment			WBR	.09*	WBR	.17*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.73**

150. Jamboree & MacArthur

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	359	.11	341	.10*
NBT	4	6800	1016	.15*	1041	.15
NBR	d	1700	245	.14	51	.03
SBL	3	5100	549	.11*	862	.17
SBT	3	5100	671	.13	1310	.26*
SBR	1	1700	631	.37	406	.24
EBL	2	3400	155	.05*	237	.07
EBT	3	5100	835	.16	1880	.37*
EBR	f		210		369	
WBL	2	3400	125	.04	293	.09*
WBT	3	5100	1635	.32*	905	.18
WBR	1	1700	620	.36	505	.30
Right Turn Adjustment			SBR	.18*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION .86 .87

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	362	.11	338	.10*
NBT	4	6800	1012	.15*	1047	.15
NBR	d	1700	247	.15	50	.03
SBL	3	5100	553	.11*	864	.17
SBT	3	5100	672	.13	1321	.26*
SBR	1	1700	637	.37	406	.24
EBL	2	3400	156	.05*	241	.07
EBT	3	5100	843	.17	1886	.37*
EBR	f		211		373	
WBL	2	3400	125	.04	296	.09*
WBT	3	5100	1641	.32*	906	.18
WBR	1	1700	615	.36	513	.30
Right Turn Adjustment			SBR	.18*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION .86 .87

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	346	.10	309	.09*
NBT	4	6800	1161	.17*	1037	.15
NBR	d	1700	223	.13	45	.03
SBL	3	5100	524	.10*	824	.16
SBT	3	5100	710	.14	1382	.27*
SBR	1	1700	636	.37	392	.23
EBL	2	3400	172	.05*	247	.07
EBT	3	5100	733	.14	1774	.35*
EBR	f		205		385	
WBL	2	3400	115	.03	275	.08*
WBT	3	5100	1438	.28*	780	.15
WBR	1	1700	647	.38	477	.28
Right Turn Adjustment			SBR	.16*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION .81 .84

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	347	.10	311	.09*
NBT	4	6800	1150	.17*	1036	.15
NBR	d	1700	224	.13	45	.03
SBL	3	5100	526	.10*	825	.16
SBT	3	5100	725	.14	1376	.27*
SBR	1	1700	638	.38	396	.23
EBL	2	3400	169	.05*	249	.07
EBT	3	5100	732	.14	1782	.35*
EBR	f		208		384	
WBL	2	3400	118	.03	272	.08*
WBT	3	5100	1448	.28*	784	.15
WBR	1	1700	644	.38	476	.28
Right Turn Adjustment			SBR	.17*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION .82 .84

174. Carlson & Michelson

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	327	.10*	174	.05*
NBT	2	3400	151	.04	111	.03
NBR	1	1700	272	.16	297	.17
SBL	2	3400	50	.01	137	.04
SBT	1	1700	24	.01*	204	.12*
SBR	f		296		1064	
EBL	2	3400	899	.26*	645	.19*
EBT	2	3400	948	.28	1066	.31
EBR	1	1700	91	.05	285	.17
WBL	1	1700	135	.08	420	.25
WBT	2	3400	957	.28*	1312	.39*
WBR	f		170		214	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.80**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	333	.10*	174	.05*
NBT	2	3400	153	.05	110	.03
NBR	1	1700	274	.16	296	.17
SBL	2	3400	50	.01	137	.04
SBT	1	1700	25	.01*	205	.12*
SBR	f		296		1068	
EBL	2	3400	897	.26*	646	.19*
EBT	2	3400	937	.28	1067	.31
EBR	1	1700	94	.06	286	.17
WBL	1	1700	141	.08	419	.25
WBT	2	3400	961	.28*	1308	.38*
WBR	f		170		213	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.79**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	367	.11*	215	.06*
NBT	2	3400	171	.05	125	.04
NBR	1	1700	302	.18	309	.18
SBL	2	3400	48	.01	117	.03
SBT	1	1700	30	.02*	212	.12*
SBR	f		283		1082	
EBL	2	3400	907	.27*	645	.19*
EBT	2	3400	940	.28	984	.29
EBR	1	1700	121	.07	319	.19
WBL	1	1700	159	.09	419	.25
WBT	2	3400	850	.25*	1282	.38*
WBR	f		152		191	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.80**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	370	.11*	215	.06*
NBT	2	3400	170	.05	125	.04
NBR	1	1700	302	.18	311	.18
SBL	2	3400	47	.01	118	.03
SBT	1	1700	31	.02*	213	.13*
SBR	f		283		1083	
EBL	2	3400	907	.27*	643	.19*
EBT	2	3400	941	.28	982	.29
EBR	1	1700	125	.07	317	.19
WBL	1	1700	164	.10	420	.25
WBT	2	3400	857	.25*	1282	.38*
WBR	f		152		192	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.81**

175. Carlson Av & Campus

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	175	.10*	237	.14*
SBT	0	0	0		0	
SBR	1	1700	295	.17	314	.18
EBL	1	1700	253	.15*	413	.24
EBT	1	1700	575	.34	1043	.61*
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3400	745	.22*	776	.23
WBR	d	1700	77	.05	177	.10
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.52**		**.80**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	176	.10*	240	.14*
SBT	0	0	0		0	
SBR	1	1700	297	.17	312	.18
EBL	1	1700	257	.15*	412	.24
EBT	1	1700	574	.34	1070	.63*
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3400	783	.23*	788	.23
WBR	d	1700	83	.05	178	.10
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.82**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	288	.17*	315	.19*
SBT	0	0	0		0	
SBR	1	1700	243	.14	275	.16
EBL	1	1700	265	.16*	385	.23*
EBT	2	3400	912	.27	1345	.40
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3400	1127	.33*	1145	.34*
WBR	d	1700	155	.09	285	.17
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.81**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	288	.17*	315	.19*
SBT	0	0	0		0	
SBR	1	1700	243	.14	275	.16
EBL	1	1700	256	.15*	386	.23*
EBT	2	3400	912	.27	1365	.40
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3400	1167	.34*	1145	.34*
WBR	d	1700	154	.09	284	.17
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.81**

176. Fairchild & MacArthur

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	53	.03*	536	.32*
SBT	0	0	0		0	
SBR	1	1700	28	.02	205	.12
EBL	1	1700	261	.15*	44	.03
EBT	3	5100	1327	.26	2774	.54*
EBR	0	0	0		0	
WBL	0	0	0		1	
WBT	3	5100	2482	.61*	1285	.29
WBR	0	0	619		186	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.91**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	53	.03*	536	.32*
SBT	0	0	0		0	
SBR	1	1700	28	.02	205	.12
EBL	1	1700	268	.16*	44	.03
EBT	3	5100	1330	.26	2774	.54*
EBR	0	0	0		0	
WBL	0	0	0		1	
WBT	3	5100	2487	.61*	1295	.29
WBR	0	0	634		186	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.85**		**.91**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	44	.03*	481	.28*
SBT	0	0	0		0	
SBR	1	1700	26	.02	211	.12
EBL	1	1700	263	.15*	38	.02
EBT	3	5100	1186	.23	2779	.54*
EBR	0	0	0		0	
WBL	0	0	0		1	
WBT	3	5100	2324	.57*	1149	.25
WBR	0	0	587		122	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.80**		**.87**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	44	.03*	482	.28*
SBT	0	0	0		0	
SBR	1	1700	26	.02	207	.12
EBL	1	1700	263	.15*	37	.02
EBT	3	5100	1166	.23	2785	.55*
EBR	0	0	0		0	
WBL	0	0	0		1	
WBT	3	5100	2334	.57*	1145	.25
WBR	0	0	597		123	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.80**		**.88**

188. Harvard & Michelson

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	120	.07*	101	.06
NBT	2	3400	462	.15	1046	.34*
NBR	0	0	48		102	
SBL	1	1700	198	.12	338	.20*
SBT	2	3400	979	.29*	688	.20
SBR	1	1700	612	.36	305	.18
EBL	2	3400	156	.05*	628	.18*
EBT	2	3400	393	.12	920	.27
EBR	f		71		191	
WBL	1	1700	100	.06	101	.06
WBT	2	3400	798	.23*	574	.17*
WBR	d	1700	182	.11	215	.13
Right Turn Adjustment			SBR	.03*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.94**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	125	.07*	100	.06
NBT	2	3400	478	.16	1048	.34*
NBR	0	0	49		101	
SBL	1	1700	198	.12	341	.20*
SBT	2	3400	978	.29*	696	.20
SBR	1	1700	617	.36	304	.18
EBL	2	3400	158	.05*	631	.19*
EBT	2	3400	393	.12	917	.27
EBR	f		71		191	
WBL	1	1700	101	.06	103	.06
WBT	2	3400	808	.24*	577	.17*
WBR	d	1700	184	.11	221	.13
Right Turn Adjustment			SBR	.03*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.73**		**.95**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	122	.07*	94	.06
NBT	2	3400	389	.13	1033	.33*
NBR	0	0	50		93	
SBL	2	3400	187	.06	315	.09*
SBT	2	3400	972	.45*	678	.28
SBR	0	0	562		288	
EBL	2	3400	130	.04*	630	.19*
EBT	2	3400	403	.12	852	.25
EBR	f		77		188	
WBL	1	1700	109	.06	95	.06
WBT	2	3400	799	.24*	518	.15*
WBR	d	1700	151	.09	207	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.85**		**.81**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	126	.07*	94	.06
NBT	2	3400	403	.13	1040	.33*
NBR	0	0	52		95	
SBL	2	3400	187	.06	320	.09*
SBT	2	3400	974	.45*	685	.29
SBR	0	0	558		286	
EBL	2	3400	126	.04*	623	.18*
EBT	2	3400	391	.12	858	.25
EBR	f		74		188	
WBL	1	1700	110	.06	98	.06
WBT	2	3400	798	.23*	522	.15*
WBR	d	1700	152	.09	210	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.80**

189. Harvard & University

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	75	.04*	78	.05
NBT	2	3400	424	.12	846	.25*
NBR	d	1700	113	.07	319	.19
SBL	1	1700	27	.02	101	.06*
SBT	2	3400	773	.23*	664	.20
SBR	d	1700	377	.22	203	.12
EBL	1	1700	111	.07*	365	.21*
EBT	3	5100	922	.19	1564	.32
EBR	0	0	56		75	
WBL	1	1700	173	.10	192	.11
WBT	3	5100	1743	.36*	1102	.23*
WBR	0	0	85		52	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.75**		**.80**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	77	.05*	76	.04
NBT	2	3400	440	.13	851	.25*
NBR	d	1700	117	.07	326	.19
SBL	1	1700	28	.02	99	.06*
SBT	2	3400	761	.22*	688	.20
SBR	d	1700	386	.23	190	.11
EBL	1	1700	113	.07*	358	.21
EBT	3	5100	925	.19	1558	.32*
EBR	0	0	53		79	
WBL	1	1700	166	.10	215	.13*
WBT	3	5100	1737	.36*	1116	.23
WBR	0	0	87		55	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.75**		**.81**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	81	.05*	82	.05
NBT	2	3400	357	.11	761	.22*
NBR	d	1700	114	.07	276	.16
SBL	1	1700	31	.02	98	.06*
SBT	2	3400	678	.20*	610	.18
SBR	d	1700	457	.27	242	.14
EBL	1	1700	113	.07*	425	.25*
EBT	3	5100	1127	.23	1755	.36
EBR	0	0	53		80	
WBL	1	1700	150	.09	180	.11
WBT	3	5100	2097	.43*	1336	.27*
WBR	0	0	80		54	
Right Turn Adjustment			SBR	.02*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.82**		**.85**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	82	.05*	81	.05
NBT	2	3400	369	.11	758	.22*
NBR	d	1700	112	.07	270	.16
SBL	1	1700	30	.02	98	.06*
SBT	2	3400	665	.20*	618	.18
SBR	d	1700	470	.28	244	.14
EBL	1	1700	120	.07*	437	.26*
EBT	3	5100	1130	.23	1771	.36
EBR	0	0	52		81	
WBL	1	1700	144	.08	181	.11
WBT	3	5100	2103	.43*	1335	.27*
WBR	0	0	82		54	
Right Turn Adjustment			SBR	.03*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.83**		**.86**

190. University & Campus

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	63	.02*	157	.05*
NBT	3	5100	924	.18	1346	.26
NBR	1	1700	272	.16	198	.12
SBL	1	1700	122	.07	68	.04
SBT	2	3400	1709	.50*	1142	.34*
SBR	1	1700	417	.25	200	.12
EBL	1	1700	136	.08	447	.26*
EBT	2	3400	496	.15*	647	.19
EBR	d	1700	261	.15	116	.07
WBL	2	3400	140	.04*	258	.08
WBT	2	3400	380	.11	607	.18*
WBR	d	1700	40	.02	196	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.76**		**.88**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	65	.02*	158	.05*
NBT	3	5100	925	.18	1335	.26
NBR	1	1700	276	.16	207	.12
SBL	1	1700	120	.07	70	.04
SBT	2	3400	1709	.50*	1132	.33*
SBR	1	1700	425	.25	198	.12
EBL	1	1700	134	.08*	440	.26*
EBT	2	3400	494	.15	673	.20
EBR	d	1700	263	.15	116	.07
WBL	2	3400	148	.04	261	.08
WBT	2	3400	410	.12*	614	.18*
WBR	d	1700	41	.02	195	.11
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**.87**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	106	.03*	258	.08
NBT	3	5100	1081	.21	1543	.30*
NBR	1	1700	406	.24	285	.17
SBL	1	1700	157	.09	83	.05*
SBT	3	5100	1922	.38*	1336	.26
SBR	1	1700	608	.36	277	.16
EBL	2	3400	174	.05	505	.15*
EBT	2	3400	806	.24*	922	.27
EBR	d	1700	370	.22	160	.09
WBL	2	3400	178	.05*	325	.10
WBT	2	3400	626	.18	905	.27*
WBR	d	1700	45	.03	202	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.75**		**.82**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	107	.03*	261	.08
NBT	3	5100	1084	.21	1570	.31*
NBR	1	1700	412	.24	295	.17
SBL	1	1700	158	.09	85	.05*
SBT	3	5100	1930	.38*	1344	.26
SBR	1	1700	610	.36	276	.16
EBL	2	3400	171	.05	506	.15*
EBT	2	3400	802	.24*	940	.28
EBR	d	1700	368	.22	160	.09
WBL	2	3400	186	.05*	326	.10
WBT	2	3400	656	.19	903	.27*
WBR	d	1700	47	.03	203	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.75**		**.83**

191. Mesa & University

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	7	.00	99	.06*
NBT	0	0	0		0	
NBR	1	1700	34	.02	163	.10
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3400	1256	.37	1657	.49*
EBR	1	1700	97	.06	54	.03
WBL	1	1700	183	.11	86	.05*
WBT	2	3400	1903	.56*	1411	.42
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.65**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	6	.00	103	.06*
NBT	0	0	0		0	
NBR	1	1700	35	.02	168	.10
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3400	1265	.37	1652	.49*
EBR	1	1700	92	.05	55	.03
WBL	1	1700	188	.11	85	.05*
WBT	2	3400	1904	.56*	1407	.41
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.65**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	8	.00	106	.06*
NBT	0	0	0		0	
NBR	1	1700	44	.03	215	.13
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	1576	.31*	2001	.39*
EBR	1	1700	114	.07	59	.03
WBL	1	1700	226	.13*	111	.07*
WBT	3	5100	2202	.43	1668	.33
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.02*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.59**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	8	.00	106	.06*
NBT	0	0	0		0	
NBR	1	1700	44	.03	215	.13
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	1576	.31*	2001	.39*
EBR	1	1700	114	.07	59	.03
WBL	1	1700	226	.13*	111	.07*
WBT	3	5100	2202	.43	1668	.33
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.02*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.59**

192. California & University

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	201	.06*	747	.22*
NBT	0	0	0		0	
NBR	1	1700	229	.13	873	.51
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3400	1094	.32*	867	.26
EBR	1	1700	1043	.61	526	.31
WBL	2	3400	941	.28*	142	.04
WBT	2	3400	921	.27	1356	.40*
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.24*	NBR	.18*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.95**		**.85**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	234	.07*	753	.22*
NBT	0	0	0		0	
NBR	1	1700	247	.15	868	.51
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3400	1076	.32*	870	.26
EBR	1	1700	1061	.62	532	.31
WBL	2	3400	923	.27*	141	.04
WBT	2	3400	939	.28	1356	.40*
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.25*	NBR	.18*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.96**		**.85**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	252	.07*	812	.24*
NBT	0	0	0		0	
NBR	1	1700	229	.13	829	.49
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	1411	.28*	1241	.24
EBR	1	1700	1111	.65	600	.35
WBL	2	3400	879	.26*	120	.04
WBT	3	5100	1298	.25	1648	.32*
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.32*	NBR	.19*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.98**		**.80**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	278	.08*	805	.24*
NBT	0	0	0		0	
NBR	1	1700	242	.14	836	.49
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	1391	.27*	1264	.25
EBR	1	1700	1112	.65	617	.36
WBL	2	3400	872	.26*	123	.04
WBT	3	5100	1316	.26	1655	.32*
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.32*	NBR	.20*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.98**		**.81**

193. MacArthur NB & University

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	34	.02*	11	.01*
NBT	0	0	0		0	
NBR	1	1700	213	.13	222	.13
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	1937	.38*	1187	.23*
EBR	d	1700	215	.13	146	.09
WBL	2	3400	445	.13*	1375	.40*
WBT	2	3400	706	.21	709	.21
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.01*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.69**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02*	10	.01*
NBT	0	0	0		0	
NBR	1	1700	215	.13	222	.13
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	1925	.38*	1203	.24*
EBR	d	1700	207	.12	144	.08
WBL	2	3400	483	.14*	1383	.41*
WBT	2	3400	710	.21	708	.21
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.71**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	32	.02*	10	.01*
NBT	0	0	0		0	
NBR	1	1700	344	.20	270	.16
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	2186	.43*	1580	.31*
EBR	d	1700	143	.08	114	.07
WBL	2	3400	587	.17*	1446	.43*
WBT	3	5100	928	.18	960	.19
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.05*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.80**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	31	.02*	11	.01*
NBT	0	0	0		0	
NBR	1	1700	344	.20	290	.17
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	2172	.43*	1600	.31*
EBR	d	1700	142	.08	117	.07
WBL	2	3400	609	.18*	1453	.43*
WBT	3	5100	951	.19	959	.19
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.04*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.80**

194. MacArthur SB & University

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	17	.01*	54	.03*
NBT	0	0	0		0	
NBR	1	1700	450	.26	475	.28
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	1		0	
EBT	3	5100	1520	.31*	905	.19*
EBR	0	0	83		57	
WBL	2	3400	347	.10*	273	.08*
WBT	3	5100	483	.09	556	.11
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.17*	NBR	.19*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.54**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	18	.01*	52	.03*
NBT	0	0	0		0	
NBR	1	1700	447	.26	485	.29
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	1		0	
EBT	3	5100	1513	.31*	905	.19*
EBR	0	0	85		55	
WBL	2	3400	345	.10*	275	.08*
WBT	3	5100	482	.09	548	.11
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.17*	NBR	.20*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.55**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	23	.01*	30	.02*
NBT	0	0	0		0	
NBR	1	1700	459	.27	553	.33
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	1		0	
EBT	3	5100	1711	.35*	1157	.23*
EBR	0	0	81		30	
WBL	2	3400	349	.10*	300	.09*
WBT	3	5100	737	.14	720	.14
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.18*	NBR	.24*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.69**		**.63**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	23	.01*	31	.02*
NBT	0	0	0		0	
NBR	1	1700	458	.27	562	.33
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	1		0	
EBT	3	5100	1702	.35*	1168	.23*
EBR	0	0	79		30	
WBL	2	3400	351	.10*	300	.09*
WBT	3	5100	757	.15	719	.14
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.18*	NBR	.24*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.69**		**.63**

202. Bridge & Harvard

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	466	.27*	464	.27*
NBT	1	1700	10	.01	8	.00
NBR	1	1700	104	.06	105	.06
SBL	0	0	4		7	
SBT	1	1700	7	.01*	4	.01*
SBR	d	1700	19	.01	20	.01
EBL	1	1700	33	.02	16	.01
EBT	2	3400	432	.25*	458	.25*
EBR	0	0	444	.26	382	
WBL	1	1700	139	.08*	84	.05*
WBT	2	3400	525	.16	345	.10
WBR	0	0	7		6	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.66**		**.63**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	467	.27*	487	.29*
NBT	1	1700	10	.01	8	.00
NBR	1	1700	106	.06	94	.06
SBL	0	0	4		6	
SBT	1	1700	7	.01*	3	.01*
SBR	d	1700	19	.01	21	.01
EBL	1	1700	32	.02	17	.01
EBT	2	3400	430	.25*	480	.26*
EBR	0	0	431	.25	407	
WBL	1	1700	142	.08*	70	.04*
WBT	2	3400	544	.16	331	.10
WBR	0	0	7		5	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.66**		**.65**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	426	.25*	298	.18*
NBT	1	1700	10	.01	6	.00
NBR	1	1700	105	.06	82	.05
SBL	0	0	5		8	
SBT	1	1700	5	.01*	3	.01*
SBR	d	1700	20	.01	20	.01
EBL	1	1700	33	.02	16	.01
EBT	2	3400	463	.22*	491	.23*
EBR	0	0	292		300	
WBL	1	1700	94	.06*	87	.05*
WBT	2	3400	529	.16	402	.12
WBR	0	0	7		8	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.52**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	421	.25*	288	.17*
NBT	1	1700	10	.01	6	.00
NBR	1	1700	103	.06	80	.05
SBL	0	0	5		8	
SBT	1	1700	5	.01*	3	.01*
SBR	d	1700	20	.01	20	.01
EBL	1	1700	33	.02	16	.01
EBT	2	3400	452	.22*	503	.23*
EBR	0	0	287		293	
WBL	1	1700	98	.06*	84	.05*
WBT	2	3400	549	.16	403	.12
WBR	0	0	8		8	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.51**

203. Bridge & Campus

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	282	.17*	216	.13*
NBT	2	3400	426	.13	405	.12
NBR	1	1700	192	.11	199	.12
SBL	1	1700	166	.10	101	.06
SBT	2	3400	440	.19*	355	.14*
SBR	0	0	204		134	
EBL	1	1700	242	.14	155	.09
EBT	2	3400	642	.26*	550	.23*
EBR	0	0	227		235	
WBL	1	1700	403	.24*	230	.14*
WBT	2	3400	404	.12	490	.14
WBR	d	1700	73	.04	110	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.91**		**.69**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	288	.17*	215	.13*
NBT	2	3400	422	.12	408	.12
NBR	1	1700	190	.11	208	.12
SBL	1	1700	165	.10	107	.06
SBT	2	3400	427	.19*	356	.14*
SBR	0	0	208		136	
EBL	1	1700	243	.14	158	.09
EBT	2	3400	645	.26*	579	.24*
EBR	0	0	222		233	
WBL	1	1700	411	.24*	233	.14*
WBT	2	3400	434	.13	502	.15
WBR	d	1700	76	.04	115	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.91**		**.70**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	369	.22*	285	.17*
NBT	2	3400	359	.11	289	.09
NBR	1	1700	204	.12	197	.12
SBL	1	1700	142	.08	101	.06
SBT	2	3400	304	.15*	321	.15*
SBR	0	0	215		180	
EBL	1	1700	302	.18	169	.10
EBT	2	3400	1004	.38*	832	.34*
EBR	0	0	287		321	
WBL	1	1700	389	.23*	237	.14*
WBT	2	3400	596	.18	745	.22
WBR	d	1700	69	.04	91	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.03**		**.85**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	377	.22*	284	.17*
NBT	2	3400	352	.10	277	.08
NBR	1	1700	202	.12	199	.12
SBL	1	1700	141	.08	102	.06
SBT	2	3400	298	.15*	319	.15*
SBR	0	0	220		179	
EBL	1	1700	299	.18	166	.10
EBT	2	3400	1007	.38*	859	.35*
EBR	0	0	283		325	
WBL	1	1700	389	.23*	236	.14*
WBT	2	3400	623	.18	747	.22
WBR	d	1700	69	.04	88	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.03**		**.86**

208. Bison & SR-73 NB Ramps

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	26	.02	45	.03*
NBT	2	3400	1731	.51*	899	.26
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	368	.11	997	.29*
SBR	1	1700	383	.23	1049	.62
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		122	.07*	117	.03*
WBT	0	5100	1		0	
WBR	1.5		399	.12	32	
Right Turn Adjustment			WBR	.05*	SBR	.31*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.71**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	27	.02	46	.03*
NBT	2	3400	1729	.51*	928	.27
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	390	.11	1002	.29*
SBR	1	1700	382	.22	1044	.61
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		130	.08*	118	.03*
WBT	0	5100	1		0	
WBR	1.5		391	.12	31	
Right Turn Adjustment			WBR	.04*	SBR	.30*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.70**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	22	.01	49	.03*
NBT	2	3400	1708	.50*	873	.26
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	250	.07	874	.26*
SBR	1	1700	442	.26	1154	.68
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		70	.04*	115	.03*
WBT	0	5100	1		0	
WBR	1.5		455	.13	35	
Right Turn Adjustment			WBR	.09*	SBR	.40*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.77**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	20	.01	51	.03*
NBT	2	3400	1720	.51*	900	.26
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	261	.08	880	.26*
SBR	1	1700	460	.27	1160	.68
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		63	.04*	115	.03*
WBT	0	5100	1		0	
WBR	1.5		465	.14	34	
Right Turn Adjustment			WBR	.10*	SBR	.40*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.77**

209. Bison & SR-73 SB Ramps

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	421	.12*	467	.14
NBR	1	1700	83	.05	93	.05
SBL	2	3400	77	.02*	287	.08
SBT	2	3400	370	.11	776	.23*
SBR	0	0	0		0	
EBL	2	3400	969	.29*	383	.11*
EBT	0	0	0		0	
EBR	f		30		64	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.39**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	425	.13*	487	.14
NBR	1	1700	79	.05	95	.06
SBL	2	3400	81	.02*	285	.08
SBT	2	3400	394	.12	784	.23*
SBR	0	0	0		0	
EBL	2	3400	972	.29*	393	.12*
EBT	0	0	0		0	
EBR	f		28		66	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.40**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	383	.11*	382	.11
NBR	1	1700	96	.06	57	.03
SBL	2	3400	44	.01*	303	.09
SBT	2	3400	246	.07	673	.20*
SBR	0	0	0		0	
EBL	2	3400	967	.28*	448	.13*
EBT	0	0	0		0	
EBR	f		44		47	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.38**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	383	.11*	402	.12*
NBR	1	1700	96	.06	59	.03
SBL	2	3400	44	.01*	301	.09*
SBT	2	3400	246	.07	673	.20
SBR	0	0	0		0	
EBL	2	3400	967	.28*	458	.13*
EBT	0	0	0		0	
EBR	f		44		47	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.39**

210. Berkley & Harvard

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	150	.09*	113	.07*
NBT	0	0	0		0	
NBR	1	1700	170	.10	480	.28
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3400	150	.08*	480	.19*
EBR	0	0	110		173	
WBL	1	1700	420	.25*	337	.20*
WBT	2	3400	300	.09	267	.08
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.06*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.47**		**.57**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	157	.09*	114	.07*
NBT	0	0	0		0	
NBR	1	1700	163	.10	490	.29
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3400	147	.08*	480	.19*
EBR	0	0	113		182	
WBL	1	1700	417	.25*	318	.19*
WBT	2	3400	313	.09	236	.07
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.08*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.47**		**.58**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	122	.07*	117	.07*
NBT	0	0	0		0	
NBR	1	1700	140	.08	450	.26
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3400	170	.08*	570	.21*
EBR	0	0	102		136	
WBL	1	1700	398	.23*	244	.14*
WBT	2	3400	338	.10	323	.10
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.08*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.43**		**.55**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	132	.08*	118	.07*
NBT	0	0	0		0	
NBR	1	1700	140	.08	449	.26
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3400	170	.08*	581	.21*
EBR	0	0	102		135	
WBL	1	1700	388	.23*	235	.14*
WBT	2	3400	358	.11	322	.09
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.08*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.44**		**.55**

211. Berkley & Campus

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	166	.10*	279	.16*
NBT	2	3400	238	.07	511	.15
NBR	d	1700	86	.05	330	.19
SBL	1	1700	8	.00	55	.03
SBT	2	3400	481	.14*	360	.11*
SBR	d	1700	10	.01	46	.03
EBL	1	1700	4	.00	37	.02
EBT	2	3400	197	.06*	665	.20*
EBR	d	1700	140	.08	199	.12
WBL	1	1700	343	.20*	152	.09*
WBT	2	3400	557	.16	636	.19
WBR	d	1700	9	.01	12	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.61**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	191	.11*	287	.17*
NBT	2	3400	238	.07	513	.15
NBR	d	1700	101	.06	331	.19
SBL	1	1700	9	.01	50	.03
SBT	2	3400	481	.14*	366	.11*
SBR	d	1700	11	.01	43	.03
EBL	1	1700	3	.00	37	.02
EBT	2	3400	201	.06*	672	.20*
EBR	d	1700	136	.08	222	.13
WBL	1	1700	343	.20*	164	.10*
WBT	2	3400	578	.17	643	.19
WBR	d	1700	9	.01	12	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.63**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	155	.09*	271	.16*
NBT	2	3400	232	.07	533	.16
NBR	d	1700	93	.05	346	.20
SBL	1	1700	10	.01	49	.03
SBT	2	3400	439	.13*	294	.09*
SBR	d	1700	11	.01	38	.02
EBL	1	1700	6	.00	44	.03
EBT	2	3400	337	.10*	798	.23*
EBR	d	1700	188	.11	219	.13
WBL	1	1700	383	.23*	170	.10*
WBT	2	3400	694	.20	724	.21
WBR	d	1700	12	.01	15	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.60**		**.63**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	176	.10*	270	.16*
NBT	2	3400	243	.07	524	.15
NBR	d	1700	101	.06	356	.21
SBL	1	1700	9	.01	49	.03
SBT	2	3400	430	.13*	314	.09*
SBR	d	1700	11	.01	37	.02
EBL	1	1700	5	.00	42	.02
EBT	2	3400	340	.10*	798	.23*
EBR	d	1700	195	.11	231	.14
WBL	1	1700	385	.23*	189	.11*
WBT	2	3400	713	.21	736	.22
WBR	d	1700	12	.01	15	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.64**

215. California & Harvard

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	237	.14*	158	.09*
NBT	1	1700	4	.00	2	.00
NBR	1	1700	393	.23	232	.14
SBL	0	0	0		0	
SBT	1	1700	0	.00*	0	.00*
SBR	0	0	0		0	
EBL	1	1700	2	.00	1	.00
EBT	2	3400	327	.14*	708	.26*
EBR	0	0	133		192	
WBL	1	1700	127	.07*	168	.10*
WBT	2	3400	523	.16	482	.14
WBR	0	0	10		8	
Right Turn Adjustment			NBR	.04*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.44**		**.50**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	251	.15*	135	.08*
NBT	1	1700	4	.00	2	.00
NBR	1	1700	419	.25	225	.13
SBL	0	0	0		0	
SBT	1	1700	0	.00*	0	.00*
SBR	0	0	0		0	
EBL	1	1700	2	.00	1	.00
EBT	2	3400	311	.13*	695	.27*
EBR	0	0	129		215	
WBL	1	1700	131	.08*	205	.12*
WBT	2	3400	519	.16	455	.14
WBR	0	0	10		8	
Right Turn Adjustment			NBR	.04*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.52**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	209	.12*	137	.08*
NBT	1	1700	4	.00	2	.00
NBR	1	1700	342	.20	225	.13
SBL	0	0	0		0	
SBT	1	1700	0	.00*	0	.00*
SBR	0	0	0		0	
EBL	1	1700	2	.00	1	.00
EBT	2	3400	309	.13*	765	.28*
EBR	0	0	140		201	
WBL	1	1700	155	.09*	179	.11*
WBT	2	3400	575	.17	473	.14
WBR	0	0	10		8	
Right Turn Adjustment			NBR	.01*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.52**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	218	.13*	126	.07*
NBT	1	1700	4	.00	2	.00
NBR	1	1700	383	.23	204	.12
SBL	0	0	0		0	
SBT	1	1700	0	.00*	0	.00*
SBR	0	0	0		0	
EBL	1	1700	2	.00	1	.00
EBT	2	3400	307	.13*	756	.29*
EBR	0	0	133		215	
WBL	1	1700	157	.09*	185	.11*
WBT	2	3400	572	.17	464	.14
WBR	0	0	10		8	
Right Turn Adjustment			NBR	.03*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.43**		**.52**

216. California & campus

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	175	.10*	236	.14*
NBT	2	3400	316	.13	297	.12
NBR	0	0	122		109	
SBL	1	1700	95	.06	137	.08
SBT	1	1700	159	.09*	278	.16*
SBR	1	1700	37	.02	47	.03
EBL	1	1700	52	.03*	120	.07
EBT	2	3400	193	.06	624	.18*
EBR	d	1700	66	.04	229	.13
WBL	1	1700	116	.07	133	.08*
WBT	2	3400	638	.19*	497	.15
WBR	d	1700	262	.15	53	.03
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.46**		**.61**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	197	.12*	245	.14*
NBT	2	3400	354	.14	282	.12
NBR	0	0	132		113	
SBL	1	1700	94	.06	150	.09
SBT	1	1700	159	.09*	319	.19*
SBR	1	1700	38	.02	51	.03
EBL	1	1700	57	.03*	109	.06
EBT	2	3400	204	.06	620	.18*
EBR	d	1700	70	.04	240	.14
WBL	1	1700	111	.07	144	.08*
WBT	2	3400	634	.19*	507	.15
WBR	d	1700	259	.15	49	.03
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.64**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	226	.13*	304	.18*
NBT	1	1700	283	.17	298	.18
NBR	1	1700	121	.07	148	.09
SBL	1	1700	89	.05	133	.08
SBT	1	1700	205	.12*	304	.18*
SBR	1	1700	45	.03	43	.03
EBL	1	1700	61	.04*	100	.06
EBT	2	3400	251	.11	700	.29*
EBR	0	0	117		291	
WBL	1	1700	140	.08	164	.10*
WBT	2	3400	732	.28*	513	.16
WBR	0	0	208		43	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.62**		**.80**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	262	.15*	315	.19*
NBT	1	1700	334	.20	285	.17
NBR	1	1700	135	.08	152	.09
SBL	1	1700	88	.05	137	.08
SBT	1	1700	205	.12*	319	.19*
SBR	1	1700	47	.03	45	.03
EBL	1	1700	67	.04*	94	.06
EBT	2	3400	260	.11	710	.30*
EBR	0	0	122		299	
WBL	1	1700	135	.08	171	.10*
WBT	2	3400	726	.28*	530	.17
WBR	0	0	211		41	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.83**

232. Culver & I-405 NB Ramps

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1666	.33	2634	.52*
NBR	f		740		340	
SBL	0	0	0		0	
SBT	3	5100	1946	.38*	1708	.33
SBR	f		1250		430	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	604	.18*	452	.13*
WBT	0	0	0		0	
WBR	1	1700	194	.11	376	.22
Right Turn Adjustment					WBR	.09*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.79**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1704	.33	2632	.52*
NBR	f		740		340	
SBL	0	0	0		0	
SBT	3	5100	1939	.38*	1729	.34
SBR	f		1250		430	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	601	.18*	461	.14*
WBT	0	0	0		0	
WBR	1	1700	186	.11	378	.22
Right Turn Adjustment					WBR	.08*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.79**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1423	.28	2467	.48*
NBR	f		740		290	
SBL	0	0	0		0	
SBT	3	5100	1849	.36*	1545	.30
SBR	f		1250		430	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	871	.26*	795	.23*
WBT	0	0	0		0	
WBR	1	1700	297	.17	633	.37
Right Turn Adjustment					WBR	.14*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.90**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1444	.28	2460	.48*
NBR	f		740		290	
SBL	0	0	0		0	
SBT	3	5100	1849	.36*	1554	.30
SBR	f		1250		430	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	861	.25*	806	.24*
WBT	0	0	0		0	
WBR	1	1700	296	.17	620	.36
Right Turn Adjustment					WBR	.12*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.66**		**.89**

233. Culver & I-405 SB Ramps

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1666	.33	2017	.40*
NBR	f		370		980	
SBL	0	0	0		0	
SBT	3	5100	2177	.43*	1703	.33
SBR	f		380		370	
EBL	1.5		754	{.26}*	953	{.29}*
EBT	0	5100	0	.26	0	{.29}
EBR	1.5		563		617	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.74**		**.74**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1719	.34	2020	.40*
NBR	f		370		980	
SBL	0	0	0		0	
SBT	3	5100	2157	.42*	1738	.34
SBR	f		380		370	
EBL	1.5		741	{.26}*	950	{.30}*
EBT	0	5100	0	.26	0	{.30}
EBR	1.5		573		632	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.73**		**.75**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1428	.28	1689	.33
NBR	f		610		1199	
SBL	0	0	0		0	
SBT	3	5100	2256	.44*	1805	.35*
SBR	f		420		393	
EBL	1.5		692	{.21}*	1052	.31*
EBT	0	5100	0	.21	0	
EBR	1.5		404		452	.27
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.71**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1459	.29	1706	.33
NBR	f		630		1189	
SBL	0	0	0		0	
SBT	3	5100	2229	.44*	1839	.36*
SBR	f		420		383	
EBL	1.5		681	{.21}*	1035	.30*
EBT	0	5100	0	.21	0	
EBR	1.5		411		469	.28
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.71**

234. Culver & Michelson

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	275	.08*	425	.13
NBT	3	5100	1317	.27	1873	.37*
NBR	0	0	45		31	
SBL	2	3400	232	.07	519	.15*
SBT	3	5100	1886	.37*	1412	.28
SBR	1	1700	646	.38	461	.27
EBL	2	3400	348	.10	912	.27*
EBT	2	3400	243	.14*	409	.20
EBR	0	0	218		274	
WBL	1	1700	120	.07*	114	.07
WBT	1.5	5100	211	{.06}	234	{.07}*
WBR	1.5		279	{.03}	255	{.04}
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.91**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	287	.08*	425	.13
NBT	3	5100	1375	.28	1879	.37*
NBR	0	0	46		32	
SBL	2	3400	231	.07	522	.15*
SBT	3	5100	1867	.37*	1455	.29
SBR	1	1700	645	.38	463	.27
EBL	2	3400	350	.10	907	.27*
EBT	2	3400	243	.14*	406	.20
EBR	0	0	217		279	
WBL	1	1700	118	.07*	116	.07
WBT	1.5	5100	211	{.06}	232	{.07}*
WBR	1.5		281	{.04}	254	{.04}
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.91**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	226	.07*	384	.11
NBT	3	5100	1253	.25	1749	.35*
NBR	0	0	31		24	
SBL	2	3400	210	.06	447	.13*
SBT	3	5100	1768	.35*	1347	.26
SBR	1	1700	691	.41	472	.28
EBL	2	3400	408	.12*	901	.26*
EBT	2	3400	209	.12	329	.17
EBR	0	0	193		244	
WBL	1	1700	83	.05	89	.05
WBT	1.5	5100	168	{.05}*	194	{.06}*
WBR	1.5		258	{.02}	219	{.03}
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.85**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	233	.07*	383	.11
NBT	3	5100	1306	.26	1760	.35*
NBR	0	0	32		24	
SBL	2	3400	209	.06	450	.13*
SBT	3	5100	1757	.34*	1392	.27
SBR	1	1700	682	.40	475	.28
EBL	2	3400	403	.12*	900	.26*
EBT	2	3400	206	.12	326	.17
EBR	0	0	191		248	
WBL	1	1700	83	.05	90	.05
WBT	1.5	5100	168	{.05}*	192	{.06}*
WBR	1.5		259	{.04}	219	{.03}
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.85**

235. Culver & University

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	70	.04*	52	.03*
NBT	4	6800	1370	.20	1639	.24
NBR	2	3400	937	.28	866	.25
SBL	1	1700	62	.04	69	.04
SBT	3	5100	1526	.30*	1269	.25*
SBR	d	1700	362	.21	194	.11
EBL	2	3400	84	.02	375	.11
EBT	3	5100	1001	.20*	1465	.29*
EBR	d	1700	69	.04	68	.04
WBL	2	3400	925	.27*	813	.24*
WBT	3	5100	1428	.29	1084	.23
WBR	0	0	36		77	
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .86 .86

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	71	.04*	53	.03*
NBT	4	6800	1437	.21	1643	.24
NBR	2	3400	959	.28	859	.25
SBL	1	1700	62	.04	71	.04
SBT	3	5100	1507	.30*	1307	.26*
SBR	d	1700	356	.21	205	.12
EBL	2	3400	86	.03	380	.11
EBT	3	5100	999	.20*	1469	.29*
EBR	d	1700	68	.04	68	.04
WBL	2	3400	925	.27*	805	.24*
WBT	3	5100	1423	.29	1102	.23
WBR	0	0	37		77	
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .86 .87

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	65	.02*	54	.02*
NBT	4	6800	1228	.18	1499	.22
NBR	2	3400	815	.24	823	.24
SBL	2	3400	59	.02	68	.02
SBT	3	5100	1337	.26*	1146	.22*
SBR	d	1700	360	.21	208	.12
EBL	2	3400	101	.03	391	.12
EBT	3	5100	1168	.23*	1589	.31*
EBR	d	1700	75	.04	67	.04
WBL	2	3400	1001	.29*	807	.24*
WBT	3	5100	1758	.35	1278	.27
WBR	0	0	43		80	
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .85 .84

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	68	.02*	53	.02*
NBT	4	6800	1293	.19	1502	.22
NBR	2	3400	837	.25	815	.24
SBL	2	3400	58	.02	70	.02
SBT	3	5100	1320	.26*	1192	.23*
SBR	d	1700	358	.21	212	.12
EBL	2	3400	103	.03	397	.12
EBT	3	5100	1166	.23*	1595	.31*
EBR	d	1700	75	.04	68	.04
WBL	2	3400	994	.29*	820	.24*
WBT	3	5100	1755	.35	1275	.27
WBR	0	0	44		81	
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .85 .85

236. Culver & Harvard

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	53	.03*	59	.03*
NBT	3	5100	1731	.34	1747	.34
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	3	5100	1833	.49*	1546	.42*
SBR	0	0	647		621	
EBL	2	3400	629	.19*	783	.23*
EBT	0	0	0		0	
EBR	1	1700	187	.11	144	.08
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.76**		**.73**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	55	.03*	60	.04*
NBT	3	5100	1811	.36	1776	.35
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	3	5100	1813	.48*	1578	.43*
SBR	0	0	645		620	
EBL	2	3400	639	.19*	764	.22*
EBT	0	0	0		0	
EBR	1	1700	187	.11	142	.08
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.75**		**.74**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	59	.03*	54	.03*
NBT	3	5100	1537	.30	1537	.30
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	3	5100	1678	.47*	1436	.40*
SBR	0	0	711		607	
EBL	2	3400	553	.16*	818	.24*
EBT	0	0	0		0	
EBR	1	1700	172	.10	147	.09
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.72**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	58	.03*	54	.03*
NBT	3	5100	1585	.31	1556	.31
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	3	5100	1647	.46*	1497	.41*
SBR	0	0	712		607	
EBL	2	3400	595	.18*	789	.23*
EBT	0	0	0		0	
EBR	1	1700	173	.10	146	.09
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.72**

237. Culvver & Campus

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	71	.04*	81	.05
NBT	3	5100	847	.17	1066	.21*
NBR	d	1700	142	.08	112	.07
SBL	2	3400	399	.12	427	.13*
SBT	2	3400	903	.27*	906	.27
SBR	1	1700	417	.25	307	.18
EBL	2	3400	131	.04*	352	.10
EBT	2	3400	231	.08	403	.15*
EBR	0	0	29		95	
WBL	1	1700	150	.09	81	.05*
WBT	2	3400	494	.15*	213	.06
WBR	1	1700	556	.33	305	.18
Right Turn Adjustment			WBR	.07*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.62**		**.59**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	72	.04	84	.05
NBT	3	5100	906	.18*	1087	.21*
NBR	d	1700	142	.08	110	.06
SBL	2	3400	393	.12*	426	.13*
SBT	2	3400	897	.26	923	.27
SBR	1	1700	418	.25	321	.19
EBL	2	3400	144	.04*	368	.11
EBT	2	3400	237	.08	405	.15*
EBR	0	0	30		98	
WBL	1	1700	145	.09	80	.05*
WBT	2	3400	482	.14*	215	.06
WBR	1	1700	573	.34	305	.18
Right Turn Adjustment			WBR	.11*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.59**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	87	.05*	98	.06*
NBT	3	5100	769	.15	925	.18
NBR	d	1700	154	.09	107	.06
SBL	2	3400	361	.11	348	.10
SBT	2	3400	772	.23*	868	.26*
SBR	1	1700	427	.25	315	.19
EBL	2	3400	132	.04*	368	.11
EBT	2	3400	276	.09	463	.17*
EBR	0	0	32		128	
WBL	1	1700	136	.08	85	.05*
WBT	2	3400	535	.16*	240	.07
WBR	1	1700	449	.26	247	.15
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.59**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	88	.05*	100	.06*
NBT	3	5100	812	.16	929	.18
NBR	d	1700	157	.09	100	.06
SBL	2	3400	362	.11	347	.10
SBT	2	3400	773	.23*	904	.27*
SBR	1	1700	426	.25	341	.20
EBL	2	3400	139	.04*	389	.11
EBT	2	3400	281	.09	458	.17*
EBR	0	0	33		132	
WBL	1	1700	134	.08	82	.05*
WBT	2	3400	526	.15*	241	.07
WBR	1	1700	458	.27	246	.14
Right Turn Adjustment			WBR	.03*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.60**

238. Culver & Bonita

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	444	.13*	246	.07*
NBT	2	3400	1024	.30	1015	.30
NBR	1	1700	139	.08	226	.13
SBL	1	1700	45	.03	33	.02
SBT	2	3400	964	.28*	893	.26*
SBR	1	1700	52	.03	21	.01
EBL	1	1700	38	.02	120	.07
EBT	2	3400	46	.01*	160	.05*
EBR	1	1700	76	.04	151	.09
WBL	2	3400	380	.11*	206	.06*
WBT	1	1700	93	.06	43	.03
WBR	0	0	17		5	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.58**		**.49**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	440	.13*	248	.07*
NBT	2	3400	997	.29	1032	.30
NBR	1	1700	138	.08	232	.14
SBL	1	1700	44	.03	34	.02
SBT	2	3400	988	.29*	901	.26*
SBR	1	1700	51	.03	21	.01
EBL	1	1700	39	.02	116	.07
EBT	2	3400	48	.01*	156	.05*
EBR	1	1700	82	.05	147	.09
WBL	2	3400	384	.11*	206	.06*
WBT	1	1700	90	.06	42	.03
WBR	0	0	16		5	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.49**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	559	.16*	284	.08*
NBT	2	3400	930	.27	931	.27
NBR	1	1700	139	.08	210	.12
SBL	1	1700	41	.02	28	.02
SBT	2	3400	862	.25*	942	.28*
SBR	1	1700	59	.03	22	.01
EBL	1	1700	38	.02	135	.08
EBT	2	3400	50	.01*	182	.05*
EBR	1	1700	82	.05	216	.13
WBL	2	3400	370	.11*	212	.06*
WBT	1	1700	115	.08	44	.03
WBR	0	0	15		4	
Right Turn Adjustment					EBR	.02*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.58**		**.54**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	548	.16*	283	.08*
NBT	2	3400	924	.27	932	.27
NBR	1	1700	142	.08	210	.12
SBL	1	1700	38	.02	28	.02
SBT	2	3400	873	.26*	946	.28*
SBR	1	1700	53	.03	22	.01
EBL	1	1700	38	.02	134	.08
EBT	2	3400	51	.02*	181	.05*
EBR	1	1700	91	.05	215	.13
WBL	2	3400	374	.11*	219	.06*
WBT	1	1700	104	.07	45	.03
WBR	0	0	14		4	
Right Turn Adjustment					EBR	.02*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.60**		**.54**

239. Bonita & Newport Coast

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	623	.18*	1008	.30*
NBR	1	1700	517	.30	544	.32
SBL	2	3400	228	.07*	276	.08*
SBT	2	3400	672	.20	631	.19
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	797	.23*	529	.16*
WBT	0	0	0		0	
WBR	1	1700	273	.16	162	.10
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.59**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	617	.18*	1009	.30*
NBR	1	1700	483	.28	553	.33
SBL	2	3400	221	.07*	277	.08*
SBT	2	3400	679	.20	630	.19
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	771	.23*	530	.16*
WBT	0	0	0		0	
WBR	1	1700	269	.16	161	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.59**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	651	.19*	990	.29*
NBR	1	1700	510	.30	517	.30
SBL	2	3400	226	.07*	293	.09*
SBT	2	3400	673	.20	628	.18
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	844	.25*	532	.16*
WBT	0	0	0		0	
WBR	1	1700	306	.18	180	.11
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.59**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	645	.19*	989	.29*
NBR	1	1700	505	.30	491	.29
SBL	2	3400	224	.07*	289	.09*
SBT	2	3400	676	.20	637	.19
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	848	.25*	523	.15*
WBT	0	0	0		0	
WBR	1	1700	301	.18	181	.11
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.58**

240. Bonita & SR-73 NB Ramps

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1003	.29*	1493	.44*
NBR	1	1700	72	.04	60	.04
SBL	2	3400	418	.12*	220	.06*
SBT	2	3400	1038	.31	940	.28
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	362	.11*	190	.06*
WBT	0	0	0		0	
WBR	1	1700	97	.06	37	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.61**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	967	.28*	1504	.44*
NBR	1	1700	71	.04	62	.04
SBL	2	3400	409	.12*	218	.06*
SBT	2	3400	1035	.30	939	.28
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	365	.11*	191	.06*
WBT	0	0	0		0	
WBR	1	1700	93	.05	36	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.61**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1037	.31*	1413	.42*
NBR	1	1700	111	.07	73	.04
SBL	2	3400	399	.12*	247	.07*
SBT	2	3400	1034	.30	907	.27
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	366	.11*	153	.05*
WBT	0	0	0		0	
WBR	1	1700	63	.04	27	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.59**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1033	.30*	1392	.41*
NBR	1	1700	109	.06	70	.04
SBL	2	3400	421	.12*	250	.07*
SBT	2	3400	1036	.30	908	.27
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	364	.11*	152	.04*
WBT	0	0	0		0	
WBR	1	1700	67	.04	28	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.58**		**.57**

241. Bonita & SR-73 SB Ramps

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	0	.00	0	.00
NBT	2	3400	617	.18	824	.24*
NBR	1	1700	136	.08	408	.24
SBL	2	3400	74	.02	135	.04*
SBT	3	5100	1260	.25*	943	.18
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	70	.02*	114	.03*
WBT	0	0	0		0	
WBR	1	1700	383	.23	376	.22
Right Turn Adjustment			WBR	.16*	WBR	.16*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.52**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	0	.00	0	.00
NBT	2	3400	609	.18	814	.24*
NBR	1	1700	139	.08	417	.25
SBL	2	3400	71	.02	143	.04*
SBT	3	5100	1261	.25*	935	.18
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	69	.02*	114	.03*
WBT	0	0	0		0	
WBR	1	1700	351	.21	387	.23
Right Turn Adjustment			WBR	.14*	WBR	.17*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.46**		**.53**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	0	.00	0	.00
NBT	2	3400	634	.19	797	.23*
NBR	1	1700	111	.07	431	.25
SBL	2	3400	59	.02	113	.03*
SBT	3	5100	1259	.25*	899	.18
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	71	.02*	135	.04*
WBT	0	0	0		0	
WBR	1	1700	396	.23	365	.21
Right Turn Adjustment			WBR	.16*	WBR	.15*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.50**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	0	.00	0	.00
NBT	2	3400	629	.19	794	.23*
NBR	1	1700	112	.07	434	.26
SBL	2	3400	58	.02	110	.03*
SBT	3	5100	1256	.25*	903	.18
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	74	.02*	132	.04*
WBT	0	0	0		0	
WBR	1	1700	401	.24	337	.20
Right Turn Adjustment			WBR	.17*	WBR	.14*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.49**

280. Newport Coast & SR-73 NB Ramps

Long-Range IY No Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1250	.37*	860	.25
NBR	f		510		190	
SBL	0	0	0		0	
SBT	2	3400	1041	.31	1252	.37*
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		119	.07*	168	.10*
WBT	0	3400	0		0	
WBR	0.5		280	.16	240	.14
Right Turn Adjustment			WBR	.09*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.58**		**.52**

Long-Range IY With Project w LRIY lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1244	.37*	860	.25
NBR	f		510		190	
SBL	0	0	0		0	
SBT	2	3400	1022	.30	1252	.37*
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		118	.07*	168	.10*
WBT	0	3400	0		0	
WBR	0.5		256	.15	240	.14
Right Turn Adjustment			WBR	.08*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.52**

Buildout No Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1291	.38*	904	.27
NBR	f		510		190	
SBL	0	0	0		0	
SBT	2	3400	995	.29	1272	.37*
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		215		198	
WBT	0	3400	0	.10*	0	.10*
WBR	0.5		139		156	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.52**

Buildout With Project w buildout lanes

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1287	.38*	889	.26
NBR	f		510		190	
SBL	0	0	0		0	
SBT	2	3400	1009	.30	1230	.36*
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		221		210	
WBT	0	3400	0	.10*	0	.11*
WBR	0.5		133		161	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.52**

City of Newport Beach Intersections

9. MacArthur & Campus .

NB GP NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	150	.094	320	.200*
NBT	4	6400	1660	.259*	1520	.238
NBR	1	1600	120	.075	80	.050
SBL	1	1600	240	.150*	150	.094
SBT	4	6400	990	.155	1510	.236*
SBR	1	1600	550	.344	910	.569
EBL	2	3200	770	.241*	530	.166*
EBT	3	4800	990	.206	700	.146
EBR	d	1600	200	.125	160	.100
WBL	2	3200	40	.013	160	.050
WBT	3	4800	630	.131*	1470	.306*
WBR	f		60		190	
Right Turn Adjustment			SBR	.029*	SBR	.333*

TOTAL CAPACITY UTILIZATION .810 1.241

NB GP WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	150	.094	320	.200*
NBT	4	6400	1670	.261*	1520	.238
NBR	1	1600	120	.075	80	.050
SBL	1	1600	240	.150*	150	.094
SBT	4	6400	980	.153	1510	.236*
SBR	1	1600	550	.344	910	.569
EBL	2	3200	770	.241*	530	.166*
EBT	3	4800	990	.206	700	.146
EBR	d	1600	200	.125	160	.100
WBL	2	3200	40	.013	160	.050
WBT	3	4800	640	.133*	1470	.306*
WBR	f		60		190	
Right Turn Adjustment			SBR	.027*	SBR	.333*

TOTAL CAPACITY UTILIZATION .812 1.241

11. Von Karman & Campus

NB GP NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	20	.013	20	.013*
NBT	2	3200	940	.294*	570	.178
NBR	f		30		20	
SBL	1	1600	40	.025*	160	.100
SBT	2	3200	580	.209	1140	.441*
SBR	0	0	90		270	
EBL	1	1600	370	.231*	240	.150*
EBT	2	3200	750	.234	1020	.319
EBR	1	1600	50	.031	70	.044
WBL	1	1600	60	.038	40	.025
WBT	2	3200	480	.181*	1040	.369*
WBR	0	0	100		140	

TOTAL CAPACITY UTILIZATION .731 .973

NB GP WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	20	.013	20	.013*
NBT	2	3200	940	.294*	570	.178
NBR	f		30		20	
SBL	1	1600	40	.025*	160	.100
SBT	2	3200	580	.209	1150	.444*
SBR	0	0	90		270	
EBL	1	1600	370	.231*	240	.150*
EBT	2	3200	750	.234	1020	.319
EBR	1	1600	50	.031	70	.044
WBL	1	1600	60	.038	40	.025
WBT	2	3200	490	.184*	1040	.369*
WBR	0	0	100		140	

TOTAL CAPACITY UTILIZATION .734 .976

13. Jamboree & Campus

NB GP NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3200	100	.031	160	.050*
NBT	4	6400	2030	.367*	1950	.406
NBR	0	0	320		720	.450
SBL	2	3200	700	.219*	470	.147
SBT	3	4800	1710	.431	2660	.608*
SBR	0	0	360		260	
EBL	2	3200	260	.081*	610	.191*
EBT	2	3200	280	.088	850	.266
EBR	f		30		30	
WBL	2	3200	800	.250	360	.113
WBT	2	3200	840	.263*	650	.203*
WBR	1	1600	170	.106	530	.331
Right Turn Adjustment					WBR	.128*
TOTAL CAPACITY UTILIZATION				**.930**		**1.180**

NB GP WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3200	100	.031	160	.050*
NBT	4	6400	2040	.369*	1940	.404
NBR	0	0	320		720	.450
SBL	2	3200	700	.219*	470	.147
SBT	3	4800	1720	.433	2670	.610*
SBR	0	0	360		260	
EBL	2	3200	270	.084*	610	.191*
EBT	2	3200	280	.088	870	.272
EBR	f		30		30	
WBL	2	3200	810	.253	360	.113
WBT	2	3200	850	.266*	650	.203*
WBR	1	1600	170	.106	530	.331
Right Turn Adjustment					WBR	.128*
TOTAL CAPACITY UTILIZATION				**.938**		**1.182**

46. Bison & SR-73 NB Ramps

NB GP NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		180	{.108}*	230	.072*
NBT	0	4800	0	.108	0	
NBR	1.5		340		100	.063
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	1	1600	20	.013	10	.006*
EBT	2	3200	1310	.409*	720	.225
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3200	130	.041	730	.228*
WBR	1	1600	260	.163	850	.531
Right Turn Adjustment					WBR	.303*
TOTAL CAPACITY UTILIZATION				**.517**		**.609**

NB GP WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		190	{.108}*	230	.072*
NBT	0	4800	0	.108	0	
NBR	1.5		330		100	.063
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	1	1600	20	.013	10	.006*
EBT	2	3200	1310	.409*	750	.234
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3200	150	.047	740	.231*
WBR	1	1600	260	.163	850	.531
Right Turn Adjustment					WBR	.300*
TOTAL CAPACITY UTILIZATION				**.517**		**.609**

47. Bison & SR-73 SB Ramps

NB GP NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	2	3200	990	.309*	370	.116*
SBT	0	0	0		0	
SBR	f		10		10	
EBL	0	0	0		0	
EBT	2	3200	310	.097*	320	.100*
EBR	1	1600	70	.044	100	.063
WBL	2	3200	50	.016*	340	.106*
WBT	2	3200	280	.088	610	.191
WBR	0	0	0		0	
TOTAL CAPACITY UTILIZATION				**.422**		**.322**

NB GP WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	2	3200	990	.309*	380	.119*
SBT	0	0	0		0	
SBR	f		10		10	
EBL	0	0	0		0	
EBT	2	3200	310	.097*	340	.106*
EBR	1	1600	70	.044	100	.063
WBL	2	3200	50	.016*	340	.106*
WBT	2	3200	300	.094	620	.194
WBR	0	0	0		0	
TOTAL CAPACITY UTILIZATION				**.422**		**.331**

53. Bonita & SR-73 NB Ramps

NB GP NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3200	390	.122*	20	.006*
NBT	0	0	0		0	
NBR	1	1600	590	.369	200	.125
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3200	790	.247*	1220	.381*
EBR	1	1600	10	.006	10	.006
WBL	1	1600	710	.444*	410	.256*
WBT	2	3200	1270	.397	1180	.369
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.247*	NBR	.119*
TOTAL CAPACITY UTILIZATION				**1.060**		**.762**

NB GP WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3200	390	.122*	20	.006*
NBT	0	0	0		0	
NBR	1	1600	590	.369	200	.125
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3200	750	.234*	1230	.384*
EBR	1	1600	10	.006	10	.006
WBL	1	1600	700	.438*	410	.256*
WBT	2	3200	1270	.397	1180	.369
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.247*	NBR	.119*
TOTAL CAPACITY UTILIZATION				**1.041**		**.765**

54. Bonita & SR-73 SB Ramps

NB GP NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3200	180	.056*	150	.047*
NBT	0	0	0		0	
NBR	1	1600	230	.144	350	.219
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3200	520	.163	810	.253*
EBR	1	1600	160	.100	590	.369
WBL	2	3200	140	.044	230	.072*
WBT	3	4800	1520	.317*	990	.206
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.088*	Multi	.288*
TOTAL CAPACITY UTILIZATION				**.461**		**.660**

NB GP WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3200	180	.056*	150	.047*
NBT	0	0	0		0	
NBR	1	1600	200	.125	360	.225
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	2	3200	510	.159	800	.250*
EBR	1	1600	160	.100	600	.375
WBL	2	3200	140	.044	240	.075*
WBT	3	4800	1520	.317*	980	.204
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.069*	Multi	.303*
TOTAL CAPACITY UTILIZATION				**.442**		**.675**

62. Newport Coast & SR-73 NB Ramps

NB GP NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3200	1520	.475*	990	.309*
NBR	f		480		330	
SBL	0	0	0		0	
SBT	2	3200	600	.188	880	.275
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		440		280	
WBT	0	3200	0	.175*	0	.091*
WBR	0.5		120		10	
TOTAL CAPACITY UTILIZATION				**.650**		**.400**

NB GP WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3200	1510	.472*	990	.309*
NBR	f		480		330	
SBL	0	0	0		0	
SBT	2	3200	580	.181	880	.275
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		440		280	
WBT	0	3200	0	.169*	0	.091*
WBR	0.5		100		10	
TOTAL CAPACITY UTILIZATION				**.641**		**.400**

Appendix C HCM DELAY CALCULATION WORKSHEETS

Intersection						
Int Delay, s/veh	1.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	49	40	337	232	31
Future Vol, veh/h	0	49	40	337	232	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	53	43	366	252	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	143	286	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	879	1273	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	879	1273	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	9.4		0.8		0	
HCM LOS	A					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1273	-	879	-	-
HCM Lane V/C Ratio	0.034	-	0.061	-	-
HCM Control Delay (s)	7.9	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	0	9	23	0	98	17	232	19	70	184	18
Future Vol, veh/h	17	0	9	23	0	98	17	232	19	70	184	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	0	10	25	0	107	18	252	21	76	200	20
Number of Lanes	0	1	0	0	1	1	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	9.4	9.1	9.4	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	13%	0%	65%	100%	0%	43%	0%
Vol Thru, %	87%	86%	0%	0%	0%	57%	84%
Vol Right, %	0%	14%	35%	0%	100%	0%	16%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	133	135	26	23	98	162	110
LT Vol	17	0	17	23	0	70	0
Through Vol	116	116	0	0	0	92	92
RT Vol	0	19	9	0	98	0	18
Lane Flow Rate	145	147	28	25	107	176	120
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.214	0.211	0.047	0.045	0.155	0.268	0.171
Departure Headway (Hd)	5.328	5.165	6.022	6.462	5.251	5.471	5.139
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	671	691	590	551	677	653	695
Service Time	3.089	2.926	4.11	4.234	3.023	3.233	2.9
HCM Lane V/C Ratio	0.216	0.213	0.047	0.045	0.158	0.27	0.173
HCM Control Delay	9.6	9.3	9.4	9.5	9	10.2	9
HCM Lane LOS	A	A	A	A	A	B	A
HCM 95th-tile Q	0.8	0.8	0.1	0.1	0.5	1.1	0.6

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	67	2	66	278	84	2	48	61	79	21	95
Future Vol, veh/h	45	67	2	66	278	84	2	48	61	79	21	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	73	2	72	302	91	2	52	66	86	23	103
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	10.6	12.9	10.9	10.7
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	44%	0%	100%	0%	0%	100%	0%	0%	18%
Vol Right, %	0%	56%	0%	0%	100%	0%	0%	100%	0%	82%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	109	45	67	2	66	278	84	79	116
LT Vol	2	0	45	0	0	66	0	0	79	0
Through Vol	0	48	0	67	0	0	278	0	0	21
RT Vol	0	61	0	0	2	0	0	84	0	95
Lane Flow Rate	2	118	49	73	2	72	302	91	86	126
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.004	0.21	0.098	0.136	0.004	0.13	0.506	0.135	0.168	0.21
Departure Headway (Hd)	7.291	6.396	7.243	6.735	6.025	6.537	6.031	5.323	7.064	5.989
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	490	559	494	531	591	548	598	672	507	598
Service Time	5.05	4.155	5.005	4.497	3.787	4.281	3.775	3.067	4.818	3.743
HCM Lane V/C Ratio	0.004	0.211	0.099	0.137	0.003	0.131	0.505	0.135	0.17	0.211
HCM Control Delay	10.1	10.9	10.8	10.6	8.8	10.3	14.8	8.9	11.2	10.3
HCM Lane LOS	B	B	B	B	A	B	B	A	B	B
HCM 95th-tile Q	0	0.8	0.3	0.5	0	0.4	2.9	0.5	0.6	0.8

Intersection						
Int Delay, s/veh	1.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	92	42	481	533	41
Future Vol, veh/h	0	92	42	481	533	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	100	46	523	579	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	312	624	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	684	953	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	684	953	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	953	-	684	-	-
HCM Lane V/C Ratio	0.048	-	0.146	-	-
HCM Control Delay (s)	9	-	11.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-

Intersection	
Intersection Delay, s/veh	19.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	1	11	44	0	183	15	314	41	250	357	17
Future Vol, veh/h	22	1	11	44	0	183	15	314	41	250	357	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	1	12	48	0	199	16	341	45	272	388	18
Number of Lanes	0	1	0	0	1	1	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	11.5	12.8	12.9	26.5
HCM LOS	B	B	B	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	9%	0%	65%	100%	0%	58%	0%
Vol Thru, %	91%	79%	3%	0%	0%	42%	91%
Vol Right, %	0%	21%	32%	0%	100%	0%	9%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	172	198	34	44	183	429	196
LT Vol	15	0	22	44	0	250	0
Through Vol	157	157	1	0	0	179	179
RT Vol	0	41	11	0	183	0	17
Lane Flow Rate	187	215	37	48	199	466	212
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.339	0.379	0.081	0.104	0.364	0.828	0.357
Departure Headway (Hd)	6.53	6.338	7.857	7.813	6.588	6.398	6.04
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	548	564	459	457	543	564	593
Service Time	4.309	4.116	5.857	5.594	4.368	4.164	3.806
HCM Lane V/C Ratio	0.341	0.381	0.081	0.105	0.366	0.826	0.358
HCM Control Delay	12.7	13	11.5	11.5	13.1	33	12.2
HCM Lane LOS	B	B	B	B	B	D	B
HCM 95th-tile Q	1.5	1.8	0.3	0.3	1.7	8.5	1.6

Intersection	
Intersection Delay, s/veh	14.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	147	289	8	71	97	73	4	45	60	122	44	84
Future Vol, veh/h	147	289	8	71	97	73	4	45	60	122	44	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	160	314	9	77	105	79	4	49	65	133	48	91
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	17.1	11.6	12.3	12.8
HCM LOS	C	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	43%	0%	100%	0%	0%	100%	0%	0%	34%
Vol Right, %	0%	57%	0%	0%	100%	0%	0%	100%	0%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	105	147	289	8	71	97	73	122	128
LT Vol	4	0	147	0	0	71	0	0	122	0
Through Vol	0	45	0	289	0	0	97	0	0	44
RT Vol	0	60	0	0	8	0	0	73	0	84
Lane Flow Rate	4	114	160	314	9	77	105	79	133	139
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.01	0.233	0.324	0.596	0.015	0.168	0.215	0.146	0.287	0.264
Departure Headway (Hd)	8.242	7.334	7.304	6.831	6.119	7.838	7.328	6.614	7.791	6.827
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	434	490	492	531	588	458	490	542	461	526
Service Time	5.991	5.083	5.039	4.531	3.819	5.584	5.073	4.359	5.536	4.572
HCM Lane V/C Ratio	0.009	0.233	0.325	0.591	0.015	0.168	0.214	0.146	0.289	0.264
HCM Control Delay	11.1	12.3	13.5	19.1	8.9	12.2	12.1	10.5	13.7	12
HCM Lane LOS	B	B	B	C	A	B	B	B	B	B
HCM 95th-tile Q	0	0.9	1.4	3.9	0	0.6	0.8	0.5	1.2	1.1

Intersection						
Int Delay, s/veh	1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	49	40	391	239	31
Future Vol, veh/h	0	49	40	391	239	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	53	43	425	260	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	147	294	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	873	1264	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	873	1264	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1264	-	873	-	-
HCM Lane V/C Ratio	0.034	-	0.061	-	-
HCM Control Delay (s)	8	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	0	9	23	0	98	17	286	19	70	191	18
Future Vol, veh/h	17	0	9	23	0	98	17	286	19	70	191	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	0	10	25	0	107	18	311	21	76	208	20
Number of Lanes	0	1	0	0	1	1	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	9.6	9.3	9.9	9.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	11%	0%	65%	100%	0%	42%	0%
Vol Thru, %	89%	88%	0%	0%	0%	58%	84%
Vol Right, %	0%	12%	35%	0%	100%	0%	16%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	160	162	26	23	98	166	114
LT Vol	17	0	17	23	0	70	0
Through Vol	143	143	0	0	0	96	96
RT Vol	0	19	9	0	98	0	18
Lane Flow Rate	174	176	28	25	107	180	123
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.258	0.254	0.049	0.046	0.159	0.277	0.179
Departure Headway (Hd)	5.336	5.199	6.263	6.6	5.388	5.537	5.212
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	668	685	575	539	659	644	683
Service Time	3.106	2.97	4.263	4.386	3.173	3.31	2.985
HCM Lane V/C Ratio	0.26	0.257	0.049	0.046	0.162	0.28	0.18
HCM Control Delay	10	9.8	9.6	9.7	9.2	10.4	9.1
HCM Lane LOS	A	A	A	A	A	B	A
HCM 95th-tile Q	1	1	0.2	0.1	0.6	1.1	0.6

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	67	2	66	278	89	2	48	61	121	21	95
Future Vol, veh/h	45	67	2	66	278	89	2	48	61	121	21	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	73	2	72	302	97	2	52	66	132	23	103
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	10.9	13.5	11.2	11.4
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	44%	0%	100%	0%	0%	100%	0%	0%	18%
Vol Right, %	0%	56%	0%	0%	100%	0%	0%	100%	0%	82%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	109	45	67	2	66	278	89	121	116
LT Vol	2	0	45	0	0	66	0	0	121	0
Through Vol	0	48	0	67	0	0	278	0	0	21
RT Vol	0	61	0	0	2	0	0	89	0	95
Lane Flow Rate	2	118	49	73	2	72	302	97	132	126
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.005	0.216	0.101	0.14	0.004	0.134	0.521	0.148	0.26	0.212
Departure Headway (Hd)	7.467	6.571	7.452	6.944	6.232	6.715	6.209	5.5	7.121	6.046
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	477	544	479	513	571	532	580	649	502	591
Service Time	5.24	4.344	5.231	4.722	4.01	4.473	3.966	3.257	4.885	3.81
HCM Lane V/C Ratio	0.004	0.217	0.102	0.142	0.004	0.135	0.521	0.149	0.263	0.213
HCM Control Delay	10.3	11.2	11.1	10.9	9	10.5	15.6	9.2	12.4	10.4
HCM Lane LOS	B	B	B	B	A	B	C	A	B	B
HCM 95th-tile Q	0	0.8	0.3	0.5	0	0.5	3	0.5	1	0.8

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	92	42	511	581	41
Future Vol, veh/h	0	92	42	511	581	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	100	46	555	632	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	339	677	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	657	911	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	657	911	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	11.5		0.7		0	
HCM LOS	B					

Minor Lane/Major Mvmt		NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)		911	-	657	-	-
HCM Lane V/C Ratio		0.05	-	0.152	-	-
HCM Control Delay (s)		9.2	-	11.5	-	-
HCM Lane LOS		A	-	B	-	-
HCM 95th %tile Q(veh)		0.2	-	0.5	-	-

Intersection	
Intersection Delay, s/veh	22.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	1	11	44	0	183	15	344	41	250	405	17
Future Vol, veh/h	22	1	11	44	0	183	15	344	41	250	405	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	1	12	48	0	199	16	374	45	272	440	18
Number of Lanes	0	1	0	0	1	1	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	11.8	13.2	13.6	31.4
HCM LOS	B	B	B	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	8%	0%	65%	100%	0%	55%	0%
Vol Thru, %	92%	81%	3%	0%	0%	45%	92%
Vol Right, %	0%	19%	32%	0%	100%	0%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	187	213	34	44	183	453	220
LT Vol	15	0	22	44	0	250	0
Through Vol	172	172	1	0	0	203	203
RT Vol	0	41	11	0	183	0	17
Lane Flow Rate	203	232	37	48	199	492	239
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.374	0.415	0.083	0.106	0.373	0.883	0.406
Departure Headway (Hd)	6.63	6.452	8.044	7.978	6.751	6.463	6.128
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	539	553	448	447	529	561	585
Service Time	4.416	4.238	6.044	5.766	4.538	4.235	3.899
HCM Lane V/C Ratio	0.377	0.42	0.083	0.107	0.376	0.877	0.409
HCM Control Delay	13.4	13.8	11.8	11.7	13.5	40.3	13.1
HCM Lane LOS	B	B	B	B	B	E	B
HCM 95th-tile Q	1.7	2	0.3	0.4	1.7	10.1	2

Intersection	
Intersection Delay, s/veh	14.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	147	289	8	71	97	110	4	45	60	145	44	84
Future Vol, veh/h	147	289	8	71	97	110	4	45	60	145	44	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	160	314	9	77	105	120	4	49	65	158	48	91
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	18.1	12	12.7	13.7
HCM LOS	C	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	43%	0%	100%	0%	0%	100%	0%	0%	34%
Vol Right, %	0%	57%	0%	0%	100%	0%	0%	100%	0%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	105	147	289	8	71	97	110	145	128
LT Vol	4	0	147	0	0	71	0	0	145	0
Through Vol	0	45	0	289	0	0	97	0	0	44
RT Vol	0	60	0	0	8	0	0	110	0	84
Lane Flow Rate	4	114	160	314	9	77	105	120	158	139
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.01	0.241	0.335	0.614	0.015	0.172	0.22	0.225	0.349	0.271
Departure Headway (Hd)	8.51	7.6	7.546	7.037	6.323	8.01	7.499	6.783	7.967	7.002
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	420	472	476	512	566	448	479	528	452	513
Service Time	6.263	5.353	5.289	4.779	4.066	5.757	5.246	4.531	5.711	4.746
HCM Lane V/C Ratio	0.01	0.242	0.336	0.613	0.016	0.172	0.219	0.227	0.35	0.271
HCM Control Delay	11.3	12.8	14.1	20.4	9.2	12.4	12.4	11.5	14.9	12.3
HCM Lane LOS	B	B	B	C	A	B	B	B	B	B
HCM 95th-tile Q	0	0.9	1.5	4.1	0	0.6	0.8	0.9	1.5	1.1

Intersection						
Int Delay, s/veh	0.9					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	60	50	630	420	40
Future Vol, veh/h	0	60	50	630	420	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	65	54	685	457	43

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	250	500	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	750	1060	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	750	1060	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1060	-	750	-	-
HCM Lane V/C Ratio	0.051	-	0.087	-	-
HCM Control Delay (s)	8.6	-	10.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	16.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	60	10	70	280	160	40	150	70	90	40	110
Future Vol, veh/h	130	60	10	70	280	160	40	150	70	90	40	110
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	141	65	11	76	304	174	43	163	76	98	43	120
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	14.8	18.1	17.5	14.1
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	68%	0%	100%	0%	0%	100%	0%	0%	27%
Vol Right, %	0%	32%	0%	0%	100%	0%	0%	100%	0%	73%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	220	130	60	10	70	280	160	90	150
LT Vol	40	0	130	0	0	70	0	0	90	0
Through Vol	0	150	0	60	0	0	280	0	0	40
RT Vol	0	70	0	0	10	0	0	160	0	110
Lane Flow Rate	43	239	141	65	11	76	304	174	98	163
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.102	0.515	0.345	0.15	0.023	0.169	0.634	0.327	0.233	0.342
Departure Headway (Hd)	8.48	7.75	8.78	8.265	7.544	8.006	7.494	6.776	8.574	7.55
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	421	464	408	432	472	447	481	529	418	474
Service Time	6.256	5.526	6.565	6.05	5.328	5.777	5.264	4.546	6.354	5.329
HCM Lane V/C Ratio	0.102	0.515	0.346	0.15	0.023	0.17	0.632	0.329	0.234	0.344
HCM Control Delay	12.2	18.5	16.2	12.5	10.5	12.4	22.5	12.8	14	14.2
HCM Lane LOS	B	C	C	B	B	B	C	B	B	B
HCM 95th-tile Q	0.3	2.9	1.5	0.5	0.1	0.6	4.3	1.4	0.9	1.5

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	100	80	750	680	50
Future Vol, veh/h	0	100	80	750	680	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	109	87	815	739	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	397	793	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	602	824	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	602	824	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	824	-	602	-	-
HCM Lane V/C Ratio	0.106	-	0.181	-	-
HCM Control Delay (s)	9.9	-	12.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.7	-	-

Intersection	
Intersection Delay, s/veh	23
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	150	290	90	80	110	100	20	70	70	230	60	220
Future Vol, veh/h	150	290	90	80	110	100	20	70	70	230	60	220
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	163	315	98	87	120	109	22	76	76	250	65	239
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	25.9	15.6	17.5	25.9
HCM LOS	D	C	C	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	50%	0%	100%	0%	0%	100%	0%	0%	21%
Vol Right, %	0%	50%	0%	0%	100%	0%	0%	100%	0%	79%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	140	150	290	90	80	110	100	230	280
LT Vol	20	0	150	0	0	80	0	0	230	0
Through Vol	0	70	0	290	0	0	110	0	0	60
RT Vol	0	70	0	0	90	0	0	100	0	220
Lane Flow Rate	22	152	163	315	98	87	120	109	250	304
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.062	0.395	0.415	0.757	0.215	0.239	0.312	0.261	0.629	0.675
Departure Headway (Hd)	10.204	9.336	9.163	8.646	7.922	9.902	9.382	8.655	9.051	7.988
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	351	385	393	419	453	363	383	414	400	453
Service Time	7.97	7.102	6.917	6.4	5.676	7.667	7.147	6.419	6.804	5.741
HCM Lane V/C Ratio	0.063	0.395	0.415	0.752	0.216	0.24	0.313	0.263	0.625	0.671
HCM Control Delay	13.6	18.1	18.3	33.9	12.8	15.8	16.4	14.5	26	25.9
HCM Lane LOS	B	C	C	D	B	C	C	B	D	D
HCM 95th-tile Q	0.2	1.8	2	6.2	0.8	0.9	1.3	1	4.1	4.9

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	50	40	625	430	30
Future Vol, veh/h	0	50	40	625	430	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	54	43	679	467	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	250	500	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	750	1060	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	750	1060	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1060	-	750	-	-
HCM Lane V/C Ratio	0.041	-	0.072	-	-
HCM Control Delay (s)	8.5	-	10.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	16.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	60	10	70	280	160	40	150	70	86	40	110
Future Vol, veh/h	130	60	10	70	280	160	40	150	70	86	40	110
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	141	65	11	76	304	174	43	163	76	93	43	120
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	14.7	18	17.4	14.1
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	68%	0%	100%	0%	0%	100%	0%	0%	27%
Vol Right, %	0%	32%	0%	0%	100%	0%	0%	100%	0%	73%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	220	130	60	10	70	280	160	86	150
LT Vol	40	0	130	0	0	70	0	0	86	0
Through Vol	0	150	0	60	0	0	280	0	0	40
RT Vol	0	70	0	0	10	0	0	160	0	110
Lane Flow Rate	43	239	141	65	11	76	304	174	93	163
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.102	0.513	0.344	0.149	0.023	0.169	0.632	0.326	0.222	0.342
Departure Headway (Hd)	8.458	7.728	8.755	8.24	7.519	7.985	7.473	6.756	8.566	7.541
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	423	464	410	434	474	448	481	530	418	474
Service Time	6.233	5.503	6.539	6.024	5.302	5.753	5.241	4.523	6.343	5.318
HCM Lane V/C Ratio	0.102	0.515	0.344	0.15	0.023	0.17	0.632	0.328	0.222	0.344
HCM Control Delay	12.2	18.4	16.1	12.5	10.5	12.4	22.3	12.8	13.8	14.2
HCM Lane LOS	B	C	C	B	B	B	C	B	B	B
HCM 95th-tile Q	0.3	2.9	1.5	0.5	0.1	0.6	4.3	1.4	0.8	1.5

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	100	50	748	678	50
Future Vol, veh/h	0	100	50	748	678	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	109	54	813	737	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	396	791	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	603	825	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	603	825	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	825	-	603	-	-
HCM Lane V/C Ratio	0.066	-	0.18	-	-
HCM Control Delay (s)	9.7	-	12.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-

Intersection	
Intersection Delay, s/veh	22.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	150	290	90	80	110	97	20	70	70	229	60	220
Future Vol, veh/h	150	290	90	80	110	97	20	70	70	229	60	220
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	163	315	98	87	120	105	22	76	76	249	65	239
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	25.7	15.5	17.5	25.8
HCM LOS	D	C	C	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	50%	0%	100%	0%	0%	100%	0%	0%	21%
Vol Right, %	0%	50%	0%	0%	100%	0%	0%	100%	0%	79%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	140	150	290	90	80	110	97	229	280
LT Vol	20	0	150	0	0	80	0	0	229	0
Through Vol	0	70	0	290	0	0	110	0	0	60
RT Vol	0	70	0	0	90	0	0	97	0	220
Lane Flow Rate	22	152	163	315	98	87	120	105	249	304
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.062	0.394	0.414	0.755	0.215	0.239	0.311	0.253	0.625	0.674
Departure Headway (Hd)	10.186	9.318	9.145	8.628	7.904	9.894	9.374	8.646	9.037	7.974
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	352	387	395	419	454	363	384	415	401	453
Service Time	7.947	7.078	6.897	6.38	5.656	7.655	7.135	6.407	6.787	5.723
HCM Lane V/C Ratio	0.063	0.393	0.413	0.752	0.216	0.24	0.313	0.253	0.621	0.671
HCM Control Delay	13.6	18	18.2	33.6	12.8	15.8	16.3	14.3	25.8	25.8
HCM Lane LOS	B	C	C	D	B	C	C	B	D	D
HCM 95th-tile Q	0.2	1.8	2	6.2	0.8	0.9	1.3	1	4.1	4.9

Appendix D STUDENT HOUSING TRIP RATE DERIVATION

Table D-1 Student Housing Trip Rates and Trip Generation Derivation – Verano 8

ADT Trip Rate for Undergraduate Dormitory					
Land Use	**Unit**	**Rate 1**	**Rate 2**	**Rate 1 Description**	**Rate 2 Description**
Graduate Housing	Bed	1.425	0.075	Non-academic vehicle trips (Off-Campus)	Internal academic vehicle trips (On-Campus)
Source: UCI Main Campus Traffic Model Note: the ADT trip rate for Graduate Housing category in the Long Range Development Plan (LRDP) is 1.9 per Bed with a car for Rate 1 and .10 for Rate 2. A vehicle ownership factor of .75 was applied to 1.9 (Rate 1) and .10 (Rate 2) to derive the trip rates shown above.					
Peak Hour Trip Rates (Percent of ADT)					
	AM Peak Hour		**PM Peak Hour**		
Description	**Inbound**	**Outbound**	**Inbound**	**Outbound**	
Residence	0.5%	5.3%	4.6%	2.8%	
Note: The trip distribution derived is for average weekday vehicle trips.					
Project ADT Trip Generation					
Land Use	**Amount**	**Unit**	**Rate 1 Vehicle Trips (Off-Campus)**	**Rate 2 Vehicle Trips (On-Campus)**	
Student Apartments	1,200	Bed	1,710	90	
Project Peak Hour Trip Generation					
	AM Peak Hour		**PM Peak Hour**		
Description	**Inbound**	**Outbound**	**Inbound**	**Outbound**	
Off-Campus					
Residence	8	91	79	48	
On-Campus					
Residence	1	4	4	2	
Total	**9**	**95**	**83**	**50**	

Table D-2 Student Housing Trip Rates and Trip Generation Derivation – Housing Amendment

ADT Trip Rate for Undergraduate Dormitory					
Land Use	**Unit**	**Rate 1**	**Rate 2**	**Rate 1 Description**	**Rate 2 Description**
Graduate Housing	Bed	1.425	0.075	Non-academic vehicle trips (Off-Campus)	Internal academic vehicle trips (On-Campus)
Undergraduate Housing	Bed	0.800	0.050	Non-academic vehicle trips (Off-Campus)	Internal academic vehicle trips (On-Campus)

Source: UCI Main Campus Traffic Model

Note: the ADT trip rate for Graduate Housing category in the Long Range Development Plan (LRDP) is 1.9 per Bed with a car for Rate 1 and .10 for Rate 2. A vehicle ownership factor of .75 was applied to 1.9 (Rate 1) and .10 (Rate 2) to derive the trip rates shown above. ADT trip rate for Undergraduate Housing category in the LRDP is 1.6 per Bed with a car for Rate 1 and .10 for Rate 2. A vehicle ownership factor of .50 was applied to 1.6 (Rate 1) and .10 (Rate 2) to derive the trip rates shown above.

Peak Hour Trip Rates (Percent of ADT)				
	AM Peak Hour		**PM Peak Hour**	
Description	**Inbound**	**Outbound**	**Inbound**	**Outbound**
Residence	0.5%	5.3%	4.6%	2.8%

Note: The trip distribution derived is for average weekday vehicle trips.

Project ADT Trip Generation				
Land Use	**Amount**	**Unit**	**Rate 1 Vehicle Trips (Off-Campus)**	**Rate 2 Vehicle Trips (On-Campus)**
Graduate Housing	1,453	Bed	2,071	109
Undergraduate Housing	3,260	Bed	2,608	163
Total	4,713	Bed	4,679	272

Project Peak Hour Trip Generation				
	AM Peak Hour		**PM Peak Hour**	
Description	**Inbound**	**Outbound**	**Inbound**	**Outbound**
Off-Campus				
Residence	23	248	215	131
On-Campus				
Residence	2	15	12	8
Total	**25**	**263**	**227**	**139**