University of California Riverside

2005 Long Range Development Plan Amendment 2

Final Environmental Impact Report
SCH NO. 2010111034

Volume I
Draft EIR

Prepared for
University of California, Riverside
Office of Finance & Business Operations
Capital Resource Management

Prepared by
Impact Sciences, Inc.
555 12th Street, Suite 1650
Oakland, CA 94607

August 2011
(Revised October 2011)

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1.0 INTRODUCTION

This Environmental Impact Report (EIR) evaluates the potentially significant environmental effects of the proposed 2nd amendment to the 2005 University of California, Riverside (UCR) Long Range Development Plan (LRDP) (hereinafter 2005 LRDP Amendment 2 or proposed project).[1]

As required by the California Environmental Quality Act (CEQA), this Draft EIR (1) assesses the potentially significant environmental effects of the proposed project, including cumulative impacts of the proposed project in conjunction with other past, present and reasonably foreseeable development; (2) identifies feasible means of avoiding or substantially lessening significant adverse impacts; and (3) evaluates a range of reasonable alternatives to the proposed project, including the No Project Alternative. The University is the "lead agency" for the project evaluated in this Draft EIR. The Board of Regents of the University of California (The Regents) has the principal responsibility for approving the 2005 LRDP Amendment 2.

1.1 PURPOSE OF THE EIR

UCR has prepared this EIR for the following purposes:

- To satisfy the requirements of CEQA (Public Resources Code, Sections 21000–21178), the *State CEQA Guidelines* (California Code of Regulations, Title 4, Chapter 14, Sections 15000–15387), and the University of California Guidelines for the Implementation of CEQA;
- To inform the general public, the local community, responsible and interested public agencies, and The Regents of the nature of the proposed 2005 LRDP Amendment 2, its potential environmental effects, measures to mitigate those effects, and alternatives to the proposed LRDP amendment;
- To enable The Regents to consider environmental consequences of approving the proposed 2005 LRDP Amendment 2; and
- To enable the University to tier subsequent projects proposed for development under the amended 2005 LRDP, pursuant to *State CEQA Guidelines* Section 15168.

As described in CEQA and the *State CEQA Guidelines*, public agencies are charged with the duty to avoid or substantially lessen significant environmental effects, where feasible. In discharging this duty, a public agency has an obligation to balance the project's significant effects on the environment with its benefits,

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1 Previous amendments to the 2005 LRDP include: (1) a 3.25-acre deed restriction in the Agricultural Operations fields south of MLK (2005 LRDP Amendment 1); (2) a change in the size of support and parking acreages at the northeast corner of Canyon Crest Drive and MLK; and (3) an amendment to the 2005 LRDP to delete the *Athletics and Recreation* land use proposed accompanying *Family, Apartment Housing and Related Support Including Child Care (Housing)* at the northwest corner of Big Springs Road and Valencia Hill Drive to accommodate the Glen Mor 2 Student Housing Development (approved May 2011).

including economic, social, technological, legal, and other benefits. This EIR is an informational document, the purpose of which is to identify the potentially significant effects of the proposed project on the environment and to indicate the manner in which those significant effects can be avoided or significantly lessened; to identify any significant and unavoidable adverse impacts that cannot be mitigated; and to identify reasonable and feasible alternatives to the proposed project that would eliminate any significant adverse environmental effects or reduce the impacts to a less than significant level.

The lead agency is required to consider the information in the EIR, along with any other relevant information, in making its decisions on the proposed project. Although the EIR does not determine the ultimate decision that will be made regarding approval of the proposed 2005 LRDP Amendment 2, CEQA requires the University to consider the information in the EIR and make findings regarding each significant and unavoidable effect identified in the EIR. The Regents will review and consider certification of the Final EIR prior to any decision on whether to approve the proposed Amendment 2 to the 2005 LRDP.

1.2 PROJECT BACKGROUND

In 2005, The Regents approved the UCR 2005 LRDP which upon full implementation would accommodate a total enrollment of 25,000 students[2] by the academic year 2015/16 with an LRDP housing goal of at least 50 percent of the students housed on the campus or in campus-controlled housing. The 2005 LRDP projected a need for the development of approximately 7.1 gross-square-feet (gsf) of new academic, housing, and support space to accommodate enrollment growth and meet UCR's academic, research, and professional program needs for a total of 11.8 million gsf on the campus at LRDP buildout. The 2005 LRDP also included a land use map that designated land use areas within the campus to guide the siting of the future physical development.

The 2005 LRDP Amendment 2 is a proposed amendment to the previously approved 2005 UCR LRDP (as amended by Amendment 1 and other minor land use changes) and proposes revisions to the 2005 LRDP land use map to allow for the location of a new School of Medicine (SOM) along with other land use map changes, and increases the maximum building space that could be built on the campus from 11.8 million gsf to 14.9 million gsf to accommodate the increased square footage requirements for the SOM. The proposed Amendment 2 does not change the projected enrollment level of 25,000 students but projects that this enrollment level will be attained in 2020/21, five years later than projected in the 2005 LRDP.

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2 Derived from 1 Full-Time Equivalent (FTE) = 1 Headcount. UCR uses a conversion rate of 1 FTE (0.95 rounded up) = 1 Headcount, and for the purposes of the 2005 LRDP and for the proposed Amendment 2, 1 FTE = 1 Headcount with the "student" taking full course loads every quarter with graduation in four years.

The UCR 2005 LRDP is not an implementation plan, and adoption of the proposed Amendment 2 to the 2005 LRDP does not constitute a commitment to any specific project, construction schedule, or funding priority. Rather, the UCR 2005 LRDP, and any revision made as revised by the proposed Amendment 2, describes a potential development program for the campus through the 2020/21 academic year. This EIR is a supplement to the 2005 LRDP EIR in that it provides an analysis of only those likely environmental effects of the 2005 LRDP analyzed in the 2005 LRDP EIR that would change as a result of the proposed land use map changes, additional building space, and the extension of the LRDP horizon year. Those impacts that would not change as a result of the proposed Amendment 2 are not reevaluated. The effects of campus growth under the amended 2005 LRDP related to greenhouse gas (GHG) emissions that were previously not analyzed in the 2005 LRDP EIR are evaluated in this EIR and determined to be less than significant.

Similar to the analysis in the 2005 LRDP EIR, this supplemental EIR also presents a programmatic analysis of the environmental impacts of campus development under the 2005 LRDP as amended by the proposed Amendment 2. As future projects, including the SOM facilities, are proposed, UCR will determine whether additional environmental review is required. As authorized by Section 15168(c) of the *State CEQA Guidelines*, projects implementing the 2005 LRDP as revised by Amendment 2 will be examined in light of the 2005 LRDP EIR and this supplemental EIR to determine whether the potential environmental effects of the individual project were adequately addressed in these EIRs, and whether any additional mitigation measures are required. If the analysis in the 2005 LRDP EIR and this EIR is determined sufficient and no additional mitigation measures are required, then no additional environmental review would be required. If however, the proposed project would have effects that were not adequately addressed, or were not examined, in the Program EIRs, additional environmental documentation would be prepared, consistent with Sections 15162 through 15164 of the *State CEQA Guidelines.*

1.3 ENVIRONMENTAL REVIEW PROCESS

1.3.1 Notice of Preparation and Scoping

A Notice of Preparation (NOP) and an Initial Study were prepared and distributed to the State Clearinghouse, trustee agencies, responsible agencies, and other interested parties on November 8, 2010. Distribution of the NOP established a 30-day review period for the public and agencies to identify environmental issues that should be addressed in the Draft EIR (Draft EIR). The NOP and comments on the NOP are included as **Appendix 1.0** in Volume II of this EIR. Issues that were raised during the NOP review period by the public and agencies are summarized in the subsections of **Section 4.0, Environmental Impact Analysis,** and are addressed in the analysis in each subsection.

During the scoping period, two public meetings were held on November 18, 2010, to solicit comments on the scope of the EIR from interested agencies, individuals, and organizations. The first meeting for the campus community was held at the Highlander Union Building, and the second meeting for the Riverside community was held at Bannockburn Room J-102 located at 3637 Canyon Crest Drive.

1.3.2 Publication of Draft EIR

This Draft EIR is being circulated for review and comment to the public and other interested parties, agencies, and organizations for a 45-day review period as required by California law. During the review period, copies of the proposed 2005 LRDP Amendment 2 and Draft EIR will be available for review at Rivera Library on UCR campus and the City of Riverside Main Library at 3581 Mission Inn Avenue. Copies of this Draft EIR, the proposed Amendment 2 text, and reference materials used in the preparation of this EIR will be available for review during normal business hours at the Office of Capital Resource Management, UCR and online at www.lrdp.ucr.edu.

In reviewing the Draft EIR, reviewers should focus on the document's adequacy in identifying and analyzing significant effects on the environment and ways in which the significant effects of the project might be avoided or mitigated. To ensure inclusion in the Final EIR and full consideration by the lead agency, comments on the Draft EIR must be received during the public review period, which ends at 5:00 PM on September 14, 2011. Written comments on the EIR may be emailed to lrdp@ucr.edu or sent to:

Capital Resource Management
3637 Canyon Crest Drive
Bannockburn Suite F-101
Riverside, California 92507
Fax: (951) 827-2402

Attn: Juanita W. Bullock, RLA, ASLA, AICP

1.3.3 Publication of Final EIR

Following the public hearing, and after the close of the written public comment period on the Draft EIR, responses to written and recorded comments will be prepared and published. The Final EIR, which will consist of the Draft EIR, comments on the Draft EIR, written responses to those comments, and the Mitigation Monitoring and Reporting Program (MMRP), will be forwarded to The Regents for their consideration.

To consider approval of the proposed 2005 LRDP Amendment 2, Section 15090 of the *State CEQA Guidelines* requires The Regents to certify that:

- The Final EIR has been completed in compliance with CEQA;

- The Final EIR was presented to The Regents, and that The Regents reviewed and considered the information contained in the Final EIR prior to approving the project; and
- The Final EIR reflects the lead agency's independent judgment and analysis.

In conjunction with their certification of the Final EIR, The Regents must also adopt written findings that address each significant adverse environmental effect identified in the Final EIR, consistent with Section 15091 of the *State CEQA Guidelines*. The Regents must also adopt the MMRP to ensure implementation of mitigation measures that have been incorporated into the project to reduce or avoid significant effects during project construction and/or implementation.

If feasible mitigations are not available to reduce significant environmental impacts to a less than significant level, those impacts are considered significant and unavoidable. If The Regents elect to approve the proposed 2005 LRDP Amendment 2, and the proposed Amendment 2 to the 2005 LRDP would have significant and unavoidable impacts, The Regents will also be required to identify the specific reasons for approving the amendment, based on the Final EIR and any other information in the public record. This "Statement of Overriding Considerations" would be incorporated into the Findings and would provide the specific reasons why the benefits of implementation of the proposed 2005 LRDP Amendment 2 outweigh the unavoidable environmental effects that would result from implementation of the proposed Amendment 2 to the 2005 LRDP.

1.4 INTENDED USES OF THE EIR

Three uses are envisioned for this document. The Regents will use this EIR to review and consider the environmental implications of approving the proposed 2005 LRDP Amendment 2. Secondly, if the proposed Amendment 2 to the 2005 LRDP is approved, this EIR will be used as a tier 1 EIR, along with the 2005 LRDP EIR, to focus environmental review of subsequent campus development projects. Lastly, this document may be used as a source of information by responsible agencies with permitting or approval authority over the project.

1.5 ORGANIZATION OF THE EIR

This EIR is organized in two volumes (Volumes I and II). Volume I presents the likely environmental impacts from the approval of the proposed 2005 LRDP Amendment 2, while Volume II provides technical appendices. The contents of Volume I include the following:

- **Section 1.0, Introduction** – provides an overview of the purpose of the EIR, the type of EIR, the EIR review process, the intended uses of the EIR, and an overview of the format and contents of the EIR.
- **Section 2.0, Executive Summary** – presents a brief synopsis of the proposed project and project objectives, community/agency issues, a description of the Mitigation Monitoring and Reporting

Program, and an overview of project alternatives. This chapter also provides a table that summarizes environmental impacts that would result from implementation of the proposed project; LRDP Planning Strategies and/or campus Programs and Practices that would avoid or reduce impacts; feasible mitigation measures to reduce potentially significant impacts, and the level of significance of impacts both before and after mitigation.

- **Section 3.0, Project Description** – provides a detailed description of the proposed project, including its location, background information, objectives, Planning Strategies, and physical characteristics.

- **Section 4.0, Environmental Impact Analysis** – presents an analysis of environmental impacts for each environmental factor. Each subsection in **Section 4.0** contains a description of the environmental setting (or existing conditions); identifies the threshold of significance used to determine whether impacts would be significant or less than significant; discusses the impacts; describes LRDP Planning Strategies and existing campus Programs and Practices that could reduce or avoid impacts; recommends feasible mitigation measures to reduce significant environmental impacts; and describes cumulative impacts. The "Introduction to the Analysis," at the beginning of the section, provides an overview of the scope and format of the environmental analysis, including a description of the baseline for analytical purposes. Based on a preliminary review of the project by the University in the Initial Study that was prepared and circulated with the NOP and the comments received in response to the NOP, this section evaluates the following environmental factors in detail:

  - Aesthetics
  - Agricultural Resources
  - Air Quality
  - Hazards and Hazardous Materials
  - Hydrology and Water Quality
  - Land Use and Planning
  - Noise
  - Population and Housing
  - Public Services
  - Transportation and Traffic
  - Utilities
  - Greenhouse Gas Emissions

  Because the proposed project would clearly not alter the conclusions of the impact analysis in the 2005 LRDP EIR related to biological resources, cultural resources, mineral resources, geology and soils, and recreation, these environmental factors are not evaluated in further detail in this EIR. All of these environmental factors/resource topics were addressed in the Initial Study, which is included as **Appendix 1.0** in Volume II of this EIR. The Initial Study provides support for the conclusion that the proposed Amendment 2 will not alter the findings of the previous analysis regarding the impacts of campus development on these environmental factors.

- **Section 5.0, Other CEQA Considerations** – summarizes impacts that would result from the proposed project, including significant environmental effects, significant and unavoidable environmental effects, irreversible changes to the environment, and growth-inducing impacts.

- **Section 6.0, Alternatives** – describes potentially feasible alternatives to the proposed project that may be capable of attaining most of the basic objectives of the project while avoiding or substantially lessening any of its significant effects. The analysis evaluates the environmental effects that would result from implementation of each of the alternatives, compares these effects to the effects that would result from implementation of the proposed project, and describes the relationship of each alternative to the project objectives.

- **Section 7.0, List of Preparers** – identifies all federal, state, or local agencies, other organizations, and/or private individuals consulted during preparation of the EIR, as well as the consultants who prepared the EIR under contract to the University.

The contents of Volume II include the following:

- **Appendix 1.0** – Initial Study/Notice of Preparation, and NOP Comments

- **Appendix 3.0** – 2005 LRDP Planning Strategies, Programs, and Practices

- **Appendix 4.3** – Air Quality Calculations

- **Appendix 4.10** – Noise Model Calculations

- **Appendix 4.14** – Traffic Impact Analysis

- **Appendix 4.16** – Greenhouse Gas Emissions Calculations

2.0 EXECUTIVE SUMMARY

2.1 PURPOSE

This Draft EIR evaluates the potential for significant environmental impacts from the approval and adoption of the proposed Amendment 2 to the 2005 University of California, Riverside (UCR) Long Range Development Plan (LRDP). It is the intent of this Executive Summary to provide the decision makers and the public with a clear, simple, and concise description of the proposed 2005 LRDP Amendment 2 and its potential significant environmental impacts. Section 15123 of the *California Environmental Quality Act (CEQA) Guidelines* requires that the summary identify each significant effect, recommended mitigation measure(s), and alternatives that would minimize or avoid potential significant impacts. The summary is also required to identify areas of controversy known to the lead agency, including issues raised by agencies and the public and issues to be resolved. These issues include the choice among alternatives and whether or how to mitigate significant effects. This summary focuses on the major areas of importance in the environmental analysis for the proposed 2005 LRDP Amendment 2 and utilizes non-technical language to promote understanding.

2.2 PROJECT LOCATION

The UCR campus is located in the City of Riverside, 1.5 miles east of downtown Riverside and just west of the Box Springs Mountains. The City of Riverside is located within the County of Riverside, in a larger geographic area known as the Inland Empire, which includes western Riverside and San Bernardino counties. The campus is generally bounded by University Avenue and Blaine Street on the north, Watkins Drive and Valencia Hill Drive and its extension south on the east, a line extending east from Le Conte Drive on the south, and Chicago Avenue on the west. The campus is bisected diagonally by the I-215/SR-60 freeway. The campus area to the east of the freeway is called the East Campus and the area to the west is called the West Campus.

2.3 PROJECT BACKGROUND AND DESCRIPTION

In 2005, The University of California Board of Regents approved the UCR 2005 LRDP which proposed to accommodate a total enrollment of 25,000 students[1] by the academic year 2015/16 with at least 50 percent of the students housed on the campus. The 2005 LRDP projected a need for the development of approximately 7.1 gross-square-feet (gsf) of new academic, housing, and support space to accommodate enrollment growth and meet UCR's academic, research, and professional program needs for a total of

[1] Derived from 1 Full-Time Equivalent (FTE) = 1 Headcount. UCR uses a conversion rate of 1 FTE (0.95 rounded up) = 1 Headcount, and for the purposes of the 2005 LRDP and for the proposed amendment, 1 FTE = 1 Headcount with the "student" taking full course loans every quarter with graduation in four years.

11.8 million gsf on the campus at LRDP buildout. The 2005 LRDP also included a land use map that designated land use areas within the campus to guide the siting of the future physical development.

The 2005 LRDP Amendment 2 is a proposed amendment to the previously approved 2005 UCR LRDP that proposes revisions to the 2005 LRDP land use map to allow for the location of a new School of Medicine (SOM) along with other land use map changes primarily for the West Campus, and increases the maximum square footage accommodated in the 2005 LRDP from 11.8 million gsf to 14.9 million gsf to accommodate the increased square footage requirements for the SOM.

The proposed 2005 LRDP Amendment 2 involves the following changes to the 2005 LRDP Land Use Map and to the text of the 2005 LRDP:

2.3.1 Proposed Land Use Map Changes

The proposed Land Use Map changes include: (1) change in the Land Use Designation of a 38.7-acre site located at the northeast corner of Iowa Avenue and Martin Luther King Boulevard Jr. (MLK) on the West Campus from *Family, Apartment Housing and Related Support (Including Child Care)* as well as *Parking* and *Academic* to *School of Medicine (SOM)* to allow a medical school and associated uses to support the school on the site; (2) change in the location of two future parking facilities and deletion of the location of one parking facility in the West Campus academic core; (3) modification to the major open space configuration in the West Campus academic core to include the reconfiguration of the "Grove" concept to the "Gage Canal Mall" concept, and the inclusion of the West Campus Mall; (4) the extension of the 100-foot-wide landscape buffer along the north side of MLK between Cranford Avenue and Chicago Avenue; (5) extension of the Northwest and Southwest Malls from Cranford Avenue to Chicago Avenue; (6) incorporation of previously approved land use amendments and map changes into the 2005 LRDP Land Use Map, including incorporation of recently acquired housing on the East Campus;[2,3] and

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2 Previously Approved Land Use Amendments to the 2005 LRDP: (1) a 3.25-acre deed restriction in the Agricultural Operations fields south of MLK (2005 LRDP Amendment 1, that was approved by the Office of the President on July 26, 2006; (2) an amendment to the 2005 LRDP to expand the *Campus Support* land use designation to accommodate the Environmental Health & Safety (EH&S) facility in the northern portion of the parcel located at the northeast corner of Canyon Crest Drive and MLK. The approval changed the size of the *Campus Support* and *Parking* acreages to accommodate the proposed facility. Approved by the Regents in July 2008 with the EH&S design approval; and (3) an amendment to the 2005 LRDP to delete the *Athletics and Recreation* land use proposed accompanying *Family, Apartment Housing and Related Support Including Child Care" (Housing)* at the northwest corner of Big Springs Road and Valencia Hill Drive to accommodate the Glen Mor 2 Student Housing Development. This was approved by the Regents in May 2011.

3 Previously Approved Map Changes to the 2005 LRDP: (1) acquisition of a parcel located at the northwest corner of Canyon Crest Drive and Linden Street containing 220 apartments in 18 2-story buildings for student housing (Falkirk). Approved by The Regents on March 14, 2007; and (2) acquisition of a parcel located on the southwest corner of Canyon Crest Drive and Linden Street containing 136 apartments in nine 2-story buildings for student housing (Oban). This was approved by The Regents in August 2009.

(7) re-designation of the land uses of several parcels to accommodate land uses displaced by the major changes listed above, including the designation of the Campus Reserve site as *Family, Apartment Housing and Related Support (Including Child Care)* and *Open Space.*[4]

2.3.2 Proposed Text Changes

The proposed text changes include: (1) extension of the 2005 LRDP horizon year from 2015/16 to 2020/21; (2) increase in the maximum square footage accommodated in the 2005 LRDP from 11.8 million gross square feet (gsf) to 14.9 million gsf (due to the building space required for the medical school); (3) design criteria for the *SOM* precinct; (4) update of the Circulation and Parking Chapter to reflect changes to the existing and future transit service and proposed Transportation Demand Management Program; (5) update of the existing Resource Conservation and Environmental Chapter to include information on the UC Policy on Sustainable Practices, UCR Sustainability and Climate Action Plans; and (6) update of the *Parking* land use designation in the 2005 LRDP to allow for retail or office as permitted uses within all proposed parking structures on the campus.

The proposed amendment does not change the projected enrollment level of 25,000 students but projects that this level will be attained in 2020/21, five years later than projected in the 2005 LRDP. The proposed 2005 LRDP Amendment 2 does, however, increase the total daily population on the campus as a result of the employees and visitors (patients) associated with the SOM that were not previously projected in the 2005 LRDP. The proposed Amendment 2 to the 2005 LRDP does not change any of the existing land use designations on the East Campus except for the inclusion and designation of recently acquired housing as residential land uses under the LRDP and a previously approved map change.

2.4 PROJECT OBJECTIVES

Key objectives of the proposed project are to:

- Serve the health care and medical education needs of the Inland Empire residents surrounding the Riverside campus and improve the health of the medically underserved throughout the inland Southern California region by facilitating the development of a school of medicine;

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4 Overall, the re-designation of parcels on the West Campus would result in the loss of 4.8 acres of *Academic*, 8.1 acres of *Special Academic Building Area*, 37.3 acres of *Campus Reserve*, and 6.2 acres of *Support* and the addition of 8.9 acres of *Family, Apartment Housing and Related Support (Including Child Care)*, 1.5 acres of *Athletic and Recreation*, 21.8 acres of *Open Space*, 3 acres of *Parking*, and 38.7 acres of *School of Medicine*. Overall, the LRDP amendments and map changes on the East Campus would result in the loss of 4.7 acres of *Athletics and Recreation* and 0.5 acre of *Parking* and the addition of 18.9 acres of *Family, Apartment Housing and Related Support (Including Child Care).*

- Provide a site for a new school of medicine at a location that would allow the school of medicine to draw upon the intellectual, technological, and material resources of the UCR's existing and future related programs and facilities, and facilitate academic and research synergies;

- Minimize travel distance between the East Campus academic core and the West Campus school of medicine by providing for enhanced pedestrian, bicycle and campus shuttle pathways/routes; and also be easily accessible to the Riverside community and the Inland Empire;

- Provide improved locations for future parking structures that re-distribute parking around the West Campus academic core to provide reasonable access from parking to all areas within the academic core and provide noise buffers between the West Campus academic core and the I-215/SR-60 freeway;

- Facilitate a pedestrian link over the freeway between East and West Campuses through the construction of a pedestrian bridge that connects two future parking structures with ADA compliance provided by the elevators within the parking structures;

- Facilitate the development of better designed Open Space on the West Campus that would allow for more buildings to have frontage on the proposed Open Space as well as serve as a transportation corridor from the southern boundary of the West Campus to the northern boundary; and

- Better utilize the available land base on the West Campus by increasing the FAR in the SOM precinct to 1.9 and the West Campus academic core to 1.6 to retain a compact academic core in relationship to each other and also with the East Campus academic core. The East Campus academic core would retain the 1.0 FAR in the 2005 LRDP.

2.5 SCOPE OF THE EIR

To determine which environmental topics should be addressed in this EIR, UCR prepared an Initial Study and circulated it along with a Notice of Preparation (NOP) in order to receive input on the scope of the EIR from interested public agencies and private parties. Copies of the NOP and Initial Study are presented in **Appendix 1.0** of this EIR. Based on both the Initial Study and the NOP comments, this EIR addresses the following environmental topics in depth:

- Aesthetics
- Agricultural Resources
- Air Quality
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Transportation and Traffic
- Utilities

2.6 IMPACT SUMMARY

A detailed discussion regarding potential impacts is provided in **Section 4.0, Environmental Impact Analysis**. In accordance with the *State CEQA Guidelines*, a summary of the project's impacts is provided in **Table 2.0-1, Summary of Impacts and Mitigation Measures**, presented at the end of this section. Approval and adoption of the proposed 2005 LRDP Amendment 2 could result in potentially significant environmental impacts to conversion of Important Farmland, air quality, noise, traffic, and greenhouse gas emissions. Some significant impacts can be reduced to less than significant levels through incorporation of mitigation measures. However, the project would have residual significant impacts with regards to conversion of prime farmland to non-agricultural uses, air emissions from construction and operational activities, construction noise and vibration, and degradation of traffic level of service from additional campus-related vehicle trips. All cumulative impacts, with the exception of impacts related to conversion of prime farmland to non-agricultural resources and traffic would be less than significant.

2.7 ALTERNATIVES TO THE PROPOSED PROJECT

The alternatives evaluated in this EIR focus on avoiding or further reducing potentially significant project-level and cumulative impacts. Project alternatives include the following:

Alternative 1: No Project Alternative. Under the No Project Alternative, none of the land use map and text changes contained in the proposed amendment to the 2005 LRDP, including the designation of the SOM site for that use and the associated increase of 3.1 million gsf of building space nor the designation of the Campus Reserve site for student housing and open space uses, would be made to the 2005 LRDP. The horizon year of the 2005 LRDP would remain at 2015/16.

Growth at UCR would continue to be guided by the 2005 LRDP. As a result, the student population would increase from 19,439 students in 2009/10 to 25,000 students by 2015/16, with the total campus daytime population of 35,540 persons compared to 41,393 persons in 2020/21 under the proposed project. The No Project Alternative population is 15 percent less than the population under the proposed project. Development on campus would increase from 6.5 million gsf in 2009/2010 to 11.8 million gsf in 2015/16, compared to an increase to 14.9 million gsf under the proposed 2005 LRDP Amendment 2. Therefore, the new building space added under this alternative would be about 37 percent less than that added under the proposed project. The West Campus would develop per the 2005 LRDP Land Use Map with no development at the Campus Reserve site, the additional 3.1 million square feet of building space associated with the medical school would not be built, and the West Campus major open space would be developed per the Grove concept, and the parking garage locations would remain unchanged.

Alternative 2: Reduced School of Medicine: Under this alternative, the SOM would be constructed at the same site as the proposed project, but a portion of the development program envisioned for the SOM would not be developed. Specifically, the medical office buildings included in the proposed project would not be developed. As a result, the reduced SOM would have approximately 2.3 million gsf of building space and a population of approximately 3,450 students, doctors, researchers, patients, and visitors, amounting to a 26 percent reduction in building space and a 45 percent reduction in population as compared to the proposed project.[5] With a 26 percent reduction in building space, the SOM footprint would be proportionally reduced from 38.7 acres under the proposed project to approximately 28.6 acres under this alternative. Other elements of the proposed Amendment 2, including the changes to the locations of the West Campus future parking structures and the changes to the West Campus major open space from a Grove concept to the Gage Canal Mall concept would remain unchanged under this alternative.

Other alternatives, including an increased density alternative and several alternative sites (Canyon Crest Family Student Housing Site, East Campus Academic Core, and the West Campus Academic Core), were considered but not carried forth for detailed evaluation because they did not meet project objectives or were found to be infeasible for technical, environmental, or social reasons.

Detailed descriptions of the two alternatives evaluated in detail and their comparative merits are presented in **Section 6.0** of this EIR. **Table 2.0-2, Summary Comparison of Project Alternatives**, which follows **Table 2.0-1**, presents a comparison of the environmental impacts of each alternative to those that are expected to result from the proposed 2005 Amendment 2.

Based on the analysis presented in the EIR, Alternative 2, Reduced School of Medicine, was identified as the Environmentally Superior Alternative (see **Section 5.0** of this EIR).

2.8 ISSUES TO BE RESOLVED/AREAS OF CONTROVERSY

This EIR addresses environmental issues associated with the proposed 2005 Amendment 2 that are known to the lead agency or were raised by other public agencies or interested parties during the EIR scoping process. During the scoping period, two public meetings were held on November 18, 2010, to solicit comments on the scope of the EIR from interested agencies, individuals, and organizations. The first meeting for the campus community was held at the Highlander Union Building, and the second meeting for the Riverside community was held at Bannockburn Room J-102 located at 3637 Canyon Crest Drive. Comment letters and the transcripts of the two scoping meetings are on file with UCR. More

5 The medical office buildings would account for 775,000 gsf of building space and approximately 2,800 employees under the proposed project.

comprehensive descriptions of issues raised during the scoping process are presented in the appropriate environmental analysis section of this EIR. Following is a list of issues raised in the scoping comments received:

- Caltrans stated that it was concerned with campus areas discharging into I-215 drainage facilities.
- The City of Riverside generally noted that the Draft EIR needs to expand on the analysis in the NOP/Initial Study as it relates to aesthetics, land use compatibility between off-campus and on-campus land uses, and public services, including an analysis of the impact of additional calls for service by the campus on City fire and police services.
- The City of Riverside stated that the proposed project should implement and maintain appropriate construction and post-construction best management practices to minimize pollutant loads in urban runoff and comply with all federal and state regulations related to water quality.
- A member of the public stated that the Campus Reserve site should be preserved for future growth of the medical school; no housing should be built on the Campus Reserve site.
- Members of the public expressed concern over how the proposed project would affect the placement of the proposed Environmental Health and Safety facility on campus and risks associated with the facility on surrounding neighborhoods and on- and off-campus school and childcare facilities.
- Members of the public expressed concern about noise impacts to off-campus receptors from future campus development.
- A member of the public requested consideration of the effects of on-campus residential population on police and fire services.
- A member of the public requested that UCR discuss the proposed project's compliance with local pedestrian and bicycle initiatives.

Table 2.0-1
Summary of Impacts and Mitigation Measures

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.1 Aesthetics					
Impact 4.1-1					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and Programs and Practices, would not substantially degrade the visual character or quality of the campus and the immediate surrounding area. The impact would be less than significant.	**PS Land Use 1** Achieve academic core densities of 1.0 FAR or higher on the East Campus and 1.6 to 1.9 FAR on the West Campus in order to achieve a balance of academic land area versus other required uses.	**PP 4.1-1** The Campus shall provide design professionals with the 2007 Campus Design Guidelines and instructions to implement the guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design. (This is identical to Land Use PP 4.9-1(a).)	Less than significant	No project-level mitigation measure required.	Less than significant
	PS Land Use 2 In order to achieve these densities of 1.0 FAR, infill sites in the partially developed East Campus academic core, and expand to the West Campus academic zone immediately adjacent to the I-215/SR-60 freeway, maintaining a compact and contiguous academic core.	**PP 4.1-2(a)** The Campus shall continue to provide design professionals with the 2007 Campus Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the Guidelines with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible. (This is identical to Land Use PP 4.9-1(b).)			

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
	PS Open Space 4 Provide landscaped buffers and setbacks along campus edges, such as Valencia Hill Drive and its extension south of Big Springs Road, Martin Luther King Jr. Boulevard, and the I-215/SR-60 freeway.				
	PS Open Space 7 Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space.				
	PS Campus & Community 1 Provide sensitive land use transitions and landscaped buffers where residential off-campus neighborhoods might experience noise or light from UCR activities.				
	PS Development Strategy 1 Establish a design review process to provide regular review of building and landscape development on campus.				
	PS Development Strategy 2 Review and update as needed the Campus Design Guidelines and the Campus Landscape Guidelines (now the 2007 Campus Design Guidelines) to ensure conformity with LRDP Planning Strategies.				

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
	PS Development Strategy 3 Review other plans or studies that may be prepared, such as district, sub-area plans, or transportation plans, for conformity with the goals and design intent of the LRDP.				
Impact 4.1-2					
Cumulative development, including the proposed 2005 LRDP Amendment 2, would not substantially degrade the visual character or quality of the campus and the immediate surrounding area. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.2 Agricultural Resources					
Impact 4.2-1					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies, would result in the conversion of approximately 37.3 acres of Prime Farmland to nonagricultural uses. The impact would be significant.	**PS Land Use 1** Achieve academic core densities of 1.0 FAR or higher on the East Campus and 1.6 to 1.9 FAR on the West Campus in order to achieve a balance of academic land area versus other required uses.	None identified.	Significant	No project-level mitigation measure available.	Significant and unavoidable
	PS Land Use 2 In order to achieve these development densities, infill sites in the partially developed East Campus academic core, and expand to the West Campus academic zone immediately adjacent to the I-215/SR-60 freeway, maintaining a compact and contiguous academic core.				
	PS Land Use 3 Maintain the teaching and research fields on the West Campus south of Martin Luther King Jr. Boulevard.				
Impact 4.2-2					
Cumulative development, including the proposed 2005 LRDP Amendment 2, would convert Prime Farmland to non-agricultural uses. The contribution of the proposed 2005 LRDP Amendment 2 to this cumulative impact would be cumulatively considerable.	None identified.	None identified.	Significant	No mitigation measure available.	Significant and unavoidable

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.3 Air Quality					
Impact 4.3-1					
Construction projects under the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in construction emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation. The impact would be significant.	None identified.	**PP 4.3-2(a)** Construction contract specifications shall include the following: (i) Compliance with all SCAQMD rules and regulations (ii) Maintenance programs to assure vehicles remain in good operating condition (iii) Avoid unnecessary idling of construction vehicles and equipment (iv) Use of alternative fuel construction vehicles (v) Provision of electrical power to the site, to eliminate the need for on-site generators	Significant	**MM 4.3-1a:** For each construction project on the campus, the project contractor will implement Programs and Practices 4.3-2(a) and 4.3-2(b). In addition, the following PM_{10} and $PM_{2.5}$ control measure shall be implemented for each construction project: • Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the District shall also be visible to ensure compliance.	Significant and unavoidable

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		PP 4.3-2(b) The Campus shall continue to implement dust control measures consistent with SCAQMD Rule 403—Fugitive Dust during the construction phases of new project development. The following actions are currently recommended to implement Rule 403 and have been quantified by the SCAQMD as being able to reduce dust generation between 30 and 85 percent depending on the source of the dust generation. The Campus shall implement these measures as necessary to reduce fugitive dust. Individual measures shall be specified in construction documents and require implementation by construction contractor: (i) Apply water and/or approved non-toxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas that have been inactive for 10 or more days). (ii) Replace ground cover in disturbed areas as quickly as possible. (iii) Enclose, cover, water twice daily, or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content. (iv) Water active grading sites at least twice daily.		**MM 4.3-1b:** For each construction project on the campus, the University shall require that the project include a construction emissions control plan that includes a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used for an aggregate of 40 or more hours during any portion of the construction project. During construction activity, the contractor shall utilize CARB certified equipment or better for all on-site construction equipment according to the following schedule: • January 1, 2011 to December 31, 2011: All off-road diesel-powered construction equipment greater than 50 hp shall meet Tier 2 off-road emissions standards. In addition, all construction equipment shall be outfitted with the BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. • January 1, 2012 to December 31, 2014: All off-road diesel-powered construction equipment greater than 50 hp shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.	

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		(v) Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period. (vi) All trucks hauling dirt, sand, soil, or other loose materials shall be covered or maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code. (vii) Sweep streets at the end of the day if visible soil material is carried over to adjacent roads. (ix) Apply water three times daily or chemical soil stabilizers according to manufacturers' specifications to all unpaved parking or staging areas or unpaved road surfaces. (x) Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads.		• Post January 1, 2015: All off-road diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. • A copy of each unit's certified specification, BACT documentation and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit or equipment. • Encourage construction contractors to apply for AQMD 'SOON" funds. Incentives could be provided for those construction contractors who apply for AQMD "SOON" funds. The "SOON" program provides funds to accelerate clean-up of off-road diesel vehicles, such as heavy duty construction equipment. More information on this program can be found at the following website: http://www.aqmd.gov/tao/implementation/ soonprogram.htm	

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
				The contractor shall also implement the following measures during construction: • Prohibit vehicle and engine idling in excess of 5 minutes and ensure that all off-road equipment is compliant with the California Air Resources Board's (CARB) in-use off-road diesel vehicle regulation and SCAQMD Rule 2449. • Configure construction parking to minimize traffic interference. • Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow. • Provide dedicated turn lanes for movement of construction trucks and equipment on- and off site. • Schedule construction activities that affect traffic flow on the arterial system to off-peak hour to the extent practicable. • Improve traffic flow by signal synchronization, and ensure that all vehicles and equipment will be properly tuned and maintained according to manufacturers' specifications. • Use diesel-powered construction vehicles and equipment that operate on low-NOx fuel where possible. • Reroute construction trucks away from congested streets or sensitive receptor areas. • Maintain and tune all vehicles and equipment according to manufacturers' specifications.	

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
				MM 4.3-1c: To minimize VOC emissions from the painting/finishing phase, for each construction project on the campus, the project contractor will implement the following VOC control measures: • Construct or build with materials that do not require painting, or use pre-painted construction materials. • If appropriate materials are not available or are cost-prohibitive, use low VOC-content materials more stringent than required under SCAQMD Rule 113.	

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.3-2					
Operation of the campus under the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would result in operational emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. The impact would be significant.	None identified.	**PP 4.3-1** The Campus shall continue to implement a Transportation Demand Management program that meets or exceeds all trip reduction and AVR requirements of the SCAQMD. The TDM program may be subject to modification as new technologies are developed or alternate program elements are found to be more effective. (This is identical to Transportation and Traffic PP 4.14-1.)	Significant	**MM 4.3-2a:** The Campus will: • Implement a subsidized vanpool program. • Implement staggered or compressed work schedules to reduce vehicular traffic. • Use alternative fuel Shuttle buses to reduce intra-campus vehicle trips. • Provide Shuttle service to major off-campus activity centers and Metrolink stations. • Aggressive expansion of the campus TDM program to achieve an AVR of 1.5. • Expand transit subsidies to encourage use of public transit. • Implement incentives for telecommuting. • Convert campus fleet to low-emission, alternative fuel and electric vehicles over time. • Implement solar or low-emission water heaters. • Implement an educational program for faculty and staff and distribute information to students and visitors about air pollution problems and solutions.	Significant and unavoidable

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
				MM 4.3-2b: UCR shall continue to participate in greenhouse gas (GHG) reduction programs such as the American College and University Presidents' Climate Commitment (ACUPCC) and shall adhere to the UC Policy on Sustainable Practices. The measures adopted by UCR are presented in **Tables 4.16-9** and **4.16-10** in **Section 4.16 Greenhouse Gas Emissions**. While these measures are typically targeted at GHG emissions, many act to reduce energy consumption and vehicle use on campus and would consequently also reduce air pollutant emissions from both area and mobile sources. In accordance with the ACUPCC and the UC Policy on Sustainable Practices and through implementation of its Climate Action Plan, UCR shall commit to reducing GHG emissions to 1990 levels by 2020, which would require significant reductions (on the order of 70 percent) from these sources in terms of GHG and therefore reductions in other air pollutants as well.	
Impact 4.3-3					
Implementation of the proposed 2005 LRDP Amendment 2 would not expose sensitive receptors to substantial concentrations of carbon monoxide. The impact would be less than significant.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.3-4					
Implementation of the proposed 2005 LRDP Amendment 2 would not expose sensitive receptors to substantial concentrations of toxic air contaminants. The impact would be less than significant.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.3-5					
Implementation of the proposed 2005 LRDP Amendment 2 would not create objectionable odors that could affect a substantial number of people. The impact would be less than significant.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.3-6					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would conflict with or obstruct implementation of the applicable air quality plan. The impact would be significant.	**PS Land Use 4** Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing.	Continue to implement **PP 4.3-1** listed under **Impact 4.3-2**	Significant	**MM 4.3-6 :** The University will implement **Mitigation Measure 4.3-1**, which is designed to reduce construction emissions. It will also implement **Mitigation Measure 4.3-2b** which will reduce air pollutant emissions resulting from traffic and energy consumption during campus operations.	Significant and unavoidable
	PS Land Use 5 Remove existing family housing units on the East Campus, and provide replacement and additional units of family housing on the West Campus.				

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
	PS Transportation 1 Develop an integrated multi-modal transportation plan to encourage walking, biking and transit use.				
	PS Transportation 2 Expand Shuttle or tram service connecting major parking lots and campus destinations, and linking the East and West Campuses. Coordinate this system with RTA routes and schedules.				
	PS Transportation 3 Provide a continuous network of bicycle lanes and paths throughout the campus, connecting to off-campus bicycle routes.				
	PS Transportation 4 Over time, limit general vehicular circulation in the central campus, but allow transit, service and emergency vehicle access, and provide access for persons with mobility impairments.				
	PS Transportation 5 Provide bicycle parking at convenient locations.				

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
	PS Transportation 6 Implement parking management measures that may include • Restricted permit availability • Restricted permit mobility • Differential permit pricing				
Impact 4.3-7					
Implementation of the proposed 2005 LRDP Amendment 2 would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard. The impact would be significant.	None identified.	None identified.	Significant	**MM 4.3-7:** The Campus will implement **Mitigation Measure 4.3-2b,** which will reduce traffic associated with campus operations.	Less than significant
4.4 Biological Resources					
This environmental factor was adequately addressed in the 2005 LRDP EIR. The Initial Study prepared for the proposed 2005 LRDP Amendment 2 (**Appendix 1.0**) found that the proposed Amendment 2 would not have any potentially significant impacts on biological resources.					
4.5 Cultural Resources					
This environmental factor was adequately addressed in the 2005 LRDP EIR (UCR 2005). The Initial Study prepared for the proposed 2005 LRDP Amendment 2 (**Appendix 1.0**) found that the proposed Amendment 2 would not have any potentially significant impacts on cultural resources.					
4.6 Geology and Soils					
This environmental factor was adequately addressed in the 2005 LRDP EIR (UCR 2005). The Initial Study prepared for the proposed 2005 LRDP Amendment 2 (**Appendix 1.0**) found that the proposed Amendment 2 would not have any potentially significant impacts on geology and soils.					

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.7 Hazards and Hazardous Materials					
Impact4.7-1					
Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would not expose campus occupants or the nearby public to significant hazards, due to the routine transport, use, disposal, or storage of hazardous materials (including chemical and radioactive waste). The impact would be less than significant.	None identified.	**PP 4.7-1** The Campus shall continue to implement the current (or equivalent) health and safety plans, programs, and practices related to the use, storage, disposal, or transportation of hazardous materials, including, but not necessarily limited to, the Business Plan, the Broadscope Radioactive Materials License, and the following programs: Biosafety, Emergency Management, Environmental Health, Hazardous Materials, Industrial Hygiene and Safety, Laboratory/Research Safety, Radiation Safety, and Integrated Waste Management. These programs may be subject to modification as more stringent standards are developed or if the programs are replaced by other programs that incorporate similar health and safety protection measures.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.7-2					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would increase the amount of hazardous materials used on and transported to and from the campus, but would not expose people to potential health risks in the event of an accident or accidental release. The impact would be less than significant.	None identified.	Continue to implement **PP 4.7-1** listed under **Impact 4.7-1.** **PP 4.7-3** The Campus will inform employees and students of hazardous materials minimization strategies applicable to research, maintenance, and instructional activities, and require the implementation of these strategies where feasible. Strategies include but are not limited to the following: (i) Maintenance of online database by EH&S of available surplus chemicals retrieved from laboratories to minimize ordering or new chemicals. (ii) Shifting from chemical usage to micro techniques as standard practice for instruction and research, as better technology becomes available.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.7-3					
Cumulative development, including campus development under the proposed 2005 LRDP Amendment 2, would not expose the public to significant hazards due to the transport, use, disposal, or storage of hazardous materials (including chemical and radioactive waste) under routine and upset conditions. The cumulative impact would be less than significant.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.8 Hydrology and Water Quality					
Impact 4.8-1					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would not substantially deplete groundwater supplies or interfere with groundwater recharge. The impact would be less than significant.	None identified.	**PP 4.8-2(a)** To further reduce the Campus' impact on domestic water resources, to the extent feasible, UCR will (i) Install hot water recirculation devices (to reduce water waste) (ii) Continue to require all new construction to comply with applicable state laws requiring water-efficient plumbing fixtures, including but not limited to the Health and Safety Code and Title 24, California Code of Regulations, Part 5 (California Plumbing Code) (iii) Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time (iv) Install recovery systems for losses attributable to existing and proposed steam and chilled-water systems (v) Prohibit using water as a means of cleaning impervious surfaces (vi) Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time (This is identical to Utilities PP 4.15-1(b).)	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		PP 4.8-2(b) The Campus shall promptly detect and repair leaks in water and irrigation pipes. (This is identical to Utilities PP 4.15-1(c).)			
		PP 4.8-2(c) The Campus shall avoid serving water at food service facilities except upon request. (This is identical to Utilities PP 4.15-1(d).)			
Impact 4.8-2					
Cumulative development, including the proposed 2005 LRDP Amendment 2, would not substantially deplete groundwater supplies or interfere with groundwater recharge. The cumulative impact would be less than significant.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.9 Land Use and Planning					
Impact 4.9-1					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and Programs and Practices, would result in changes in on-campus land uses. These changes would not be substantially incompatible with existing or proposed adjacent land uses on and off campus. The impact would be less than significant.	**PS Land Use 1** Achieve academic core densities of 1.0 FAR or higher on the East Campus and 1.6 to 1.9 FAR on the West Campus in order to achieve a balance of academic land area versus other required uses.	**PP 4.9-1(a)** The Campus shall provide design professionals with the 2007 Campus Design Guidelines and instructions to implement the guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design. (This is identical to Aesthetics PP 4.1-1.)	Less than significant	No project-level mitigation measure required.	Less than significant
	PS Land Use 2 In order to achieve these development densities, infill sites in the partially developed East Campus academic core, and expand to the West Campus academic zone immediately adjacent to the I-215/SR-60 freeway, maintaining a compact and contiguous academic core.	**PP 4.9-1(b)** The Campus shall continue to provide design professionals with the 2007 Campus Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the Guidelines with respect to the selection of plants, retention of existing trees and use of water conserving plants were feasible. (This is identical to Aesthetics PP 4.1-2(a).)			

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
	PS Land Use 3 Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.	**PP 4.9-1(d)** UCR strongly commits to working closely with the City of Riverside to address and resolve land use compatibility impacts arising from increased enrollment on the residential neighborhoods surrounding UCR, particularly related to the impacts of student housing and associated parking, noise, and traffic.			
	PS Land Use 4 Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing				
	PS Land Use 5 Remove existing family housing units on the East Campus, and provide replacement and additional units of family housing on the West Campus.				
	PS Land Use 6 Provide expanded athletics and recreational facilities and fields on the East and West Campuses, adjacent to concentrations of student housing.				
	PS Land Use 7 Over time, relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate.				

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
	PS Open Space 4 Provide landscaped buffers and setbacks along campus edges, such as Valencia Hill Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, and the I-215/SR-60 freeway.				
	PS Open Space 6 Provide a new Campus Landmark Open Space on the West Campus, the Gage Canal Mall, to reflect the natural dry arroyos that are part of the Riverside landscape, and provide gathering/activity spaces within and adjacent to the Mall.				
	PS Open Space 7 Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space.				
	PS Campus & Community 1 Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.				

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
	PS Campus & Community 2 Work with the City to link the open spaces of UCR, University Avenue, the Marketplace, and the Downtown with enhanced streetscape treatments, including bicycle and pedestrian improvements.				
	PS Campus & Community 3 Work with the City to link the open spaces of UCR with the Citywide Trail Network.				
	PS Transportation 1 Develop an integrated multi-modal transportation plan to encourage walking, biking and transit use.				
	PS Transportation 2 Expand shuttle or tram service connecting major parking lots and campus destinations, and linking the East and West Campuses. Coordinate this system with RTA routes and schedules.				
	PS Transportation 3 Provide a continuous network of bicycle lanes and paths throughout the campus, connecting to off-campus bicycle routes.				

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
	PS Transportation 4 Over time, limit general vehicular circulation in the central campus, but allow transit, service, and emergency vehicle access, and provide access for persons with mobility impairments.				
	PS Transportation 5 Provide bicycle parking at convenient locations.				
	PS Transportation 6 Implement parking management measures that may include • Restricted permit availability • Restricted permit mobility • Differential permit pricing				
Impact 4.9-2					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and Programs and Practices, would not conflict with a land use plan, policy, or regulation of a local agency. The impact would be less than significant.	Continue to implement **PS Land Use 1-6, PS Open Space 4,6-7, PS Campus & Community 2-3**, and **PS Transportation 1-6** listed under **Impact 4.9-1**	Continue to implement **PP 4.9-1(a) -(b)** listed under **Impact 4.9-1**	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.9-3					
Cumulative development, including the proposed 2005 LRDP Amendment 2, would not result in the development of land uses that are substantially incompatible with existing or planned land uses adjacent to the campus. The contribution of the campus development under the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant
Impact 4.9-4					
Cumulative development, including the proposed 2005 LRDP Amendment 2, would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the development. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.10 Noise					
Impact 4.10-1					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and Programs and Practices, would not expose on-campus student residential uses to noise levels in excess of the State's 45 dB(A) CNEL interior noise standard. The impact would be less than significant.	**PS Open Space 4** Provide landscaped buffers and setbacks along campus edges, such as Valencia Hills Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, and the I-215/SR-60 freeway.	**PP 4.10-1(a)** UCR will incorporate the following siting design measures to reduce long-term noise impacts: (i) Truck access, parking area design, and air conditioning/refrigeration units will be designed and evaluated when planning specific individual new facilities to minimize the potential for noise impacts to adjacent developments. (ii) Building setbacks, building design and orientation will be used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes, such as Blaine Street, Canyon Crest Drive, University Avenue, and Martin Luther King Jr. Boulevard. Noise walls may be advisable to screen existing and proposed facilities located near the I-215/SR-60 freeway.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		(iii) Adequate acoustic insulation would be added to residence halls to ensure that the interior L_{dn} would not exceed 45 dB(A) during the daytime and 40 dB(A) during the nighttime (10 PM to 7 AM) in rooms facing major streets. (iv) Potential noise impacts would be evaluated as part of the design review for all projects. If determined to be significant, mitigation measures would be identified and alternatives suggested. At a minimum, campus residence halls and student housing design would comply with Title 24, Part 2 of the California Administrative Code.			
Impact 4.10-2					
Construction associated with the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, could generate and expose persons on campus to excessive groundborne vibration or groundborne noise levels. The impact would be significant.	None identified.	**PP 4.10-2** The UCR Campus shall limit the hours of exterior construction activities from 7:00 AM to 9:00 PM. Monday through Friday and 8:00 AM. to 6:00PM. on Saturday when necessary. Construction traffic shall follow transportation routes prescribed for all construction traffic to minimize the impact of this traffic (including noise impacts) on the surrounding community.	Significant	**MM 4.10-2:** The Campus shall notify all academic and residential facilities within 300 feet of approved construction sites of the planned schedule of vibration causing activities so that the occupants and/or researchers can take necessary precautionary measures to avoid negative effects to their activities and/or research.	Significant and unavoidable

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.10-3					
Construction associated with the proposed 2005 LRDP Amendment 2 would not generate and expose persons off campus to excessive groundborne vibration or groundborne noise levels. This is considered a less than significant impact.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.10-4					
Operation of campus facilities under the proposed 2005 LRDP Amendment 2 would not generate and expose persons on- or off-campus to excessive groundborne vibration or groundborne noise levels. This is considered a less than significant impact.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.10-5					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would generate increased local traffic volumes, but the traffic would not cause a substantial permanent increase in noise levels at on- or off-campus locations. The impact would be less than significant.	None identified.	**PP 4.10-5(a)** The Campus shall continue to provide on-campus housing to continue the evolution of UCR from a commuter to a residential campus. **PP 4.10-5(b)** The Campus shall continue to implement an Alternative Transportation program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.10-6					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, could add new stationary-source noise. However, it would not cause a substantial permanent on- or off-campus increase in ambient noise levels on or off-campus. The impact would be less than significant.	**PS Open Space 4** Provide landscaped buffers and setbacks along campus edges, such as Valencia Hill Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, and the I-215/SR-60 freeway. **PS Campus and Community 1** Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.	**PP 4.10-6** The Campus shall continue to shield all new stationary sources of noise that would be located in close proximity to noise-sensitive buildings and uses.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.10-7					
Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in substantial temporary or periodic increases in ambient noise levels at locations on campus. The impact would be significant.	None identified.	**PP 4.10-7(a)** To the extent feasible, construction activities shall be limited to 7:00 AM to 9:00 PM. Monday through Friday, 8:00 AM to 6:00 PM on Saturday, and no construction on Sunday and national holidays, as appropriate, in order to minimize disruption to area residences surrounding the campus and to on-campus uses that are sensitive to noise. **PP 4.10-7(b)** The Campus shall continue to require by contract specifications that construction equipment be required to be muffled or otherwise shielded. Contracts shall specify that engine-driven equipment be fitted with appropriate noise mufflers.	Significant	No project-level mitigation measure available.	Significant and unavoidable
		PP 4.10-7(c) The Campus shall continue to require that stationary construction equipment material and vehicle staging be placed to direct noise away from sensitive receptors. **PP 4.10-7(d)** The Campus shall continue to conduct regular meetings, as needed, with on-campus constituents to provide advance notice of construction activities in order to coordinate these activities with the academic calendar, scheduled events, and other situations, as needed.			

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.10-8					
Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in substantial temporary or periodic increases in ambient noise levels at off-campus locations. This impact would be significant.		Continue to implement **PP 4.10-7(a) -(d)** listed under **Impact 4.10-7** **PP 4.10-8** The Campus shall continue to conduct meetings, as needed, with off-campus constituents that are affected by campus construction to provide advance notice of construction activities and ensure that the mutual needs of the particular construction project and of those impacted by construction noise are met, to the extent feasible.	Significant	No project-level mitigation measure available.	Significant and unavoidable
Impact 4.10-9					
Implementation of the proposed 2005 LRDP Amendment 2 could result in temporary or periodic increases in ambient noise levels due to special events that are not substantial, although special events would occur as under existing conditions. The impact would be less than significant.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.11 Population and Housing					
Impact 4.11-1					
Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant 2005 LRDP Planning Strategy, would directly induce substantial population growth in the area by facilitating additional employment on the campus. Because projected housing supply in the study area would be adequate to serve this additional population, this impact would be less than significant.	**PS Land Use 4** Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.11-2					
Cumulative development, including campus development under the amended 2005 LRDP, would directly induce substantial population growth in the City of Riverside. However, adequate housing would be available to serve the population. The cumulative impact would be less than significant.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.12 Public Services					
Impact 4.12-1					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would not result in significant environmental impacts associated with the provision of new or altered fire protection facilities to maintain applicable service levels. The impact would be less than significant.	None identified.	**PP 4.12-1(a)** As development occurs, the following measures will be incorporated: (i) New structures would be designed with adequate fire protection features in compliance with state law and the requirements of the State Fire Marshal. Building designs would be reviewed by appropriate campus staff and government agencies. (ii) Prior to implementation of individual projects, the adequacy of water supply and water pressure will be determined in order to ensure sufficient fire protection services. (iii) Adequate access will be provided to within 50 feet of the main entrance of occupied buildings to accommodate emergency ambulance service.	Less than significant	**MM 4.12-1:** Should the City propose the construction of a new fire station to serve the campus and its surrounding areas, and the analysis of the environmental effects of the fire station project indicate that there would be potentially significant impacts requiring mitigation, the University will pay its proportional share of the cost of the environmental mitigation required for the project.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		(iv) Adequate access for fire apparatus will be provided within 50 feet of stand pipes and sprinkler outlets. (v) Service roads, plazas, and pedestrian walks that may be used for fire or emergency vehicles will be constructed to withstand loads of up to 45,000 pounds. (vi) As implementation of the LRDP occurs, campus fire prevention staffing needs would be assessed, increases in staffing would be determined through such needs assessments.			
		PP 4.12-1(b) (i) Accident prevention features shall be reviewed and incorporated into new structures to minimize the need for emergency response from the City of Riverside. (ii) Increased staffing levels for local fire agencies shall be encouraged to meet needs generated by LRDP project related on-campus population increases.			

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.12-2					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would not result in significant environmental impacts associated with the provision of new or altered police facilities. The impact would be less than significant.	None identified.	**PP 4.12-2(a)** As development under the LRDP occurs, the Campus will hire additional police officers and support staff as necessary to maintain an adequate level of service, staff, and equipment, and will expand the existing police facility when additional space is required. **PP 4.12-2(b)** The Campus will continue to participate in the "UNET" program (for coordinated police response and staffing of a community service center), which provides law enforcement services in the vicinity of the campus, with equal participation of UCR and City police staffs.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.12-3					
Cumulative development, including the proposed 2005 LRDP Amendment 2, would not result in significant environmental impacts associated with the provision of new or altered fire and police facilities. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant
4.13 Recreation					
This environmental factor was adequately addressed in the 2005 LRDP EIR. The Initial Study prepared for the proposed 2005 LRDP Amendment 2 (**Appendix 1.0**) found that the proposed Amendment 2 would not have any potentially significant impacts on recreation.					

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.14 Transportation and Traffic					
Impact 4.14-1					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service under 2020 conditions. The impact would be significant.	**PS Land Use 4** Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing. **PS Land Use 7** Over time, relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate.	**PP 4.14-1** The Campus shall continue to implement a Transportation Demand Management program that meets or exceeds all trip reduction and AVR requirements of the SCAQMD. The TDM program may be subject to modification as new technologies are developed or alternate program elements are found to be more effective. (This is identical to Air Quality PP 4.3-1.)	Significant	**MM 4.14-1a:** Reconfigure the intersection of Parking Lot 1/Campus Drive to add a lane to the eastbound approach that would result in a joint left-turn/through lane with a separate right-turn lane and signalize intersection.	Significant and unavoidable
	PS Transportation 1 Develop an integrated multi-modal transportation plan to encourage walking, biking and transit use. PS Transportation 2Expand Shuttle or tram service connecting major parking lots and campus destinations, and linking the East and West Campuses. Coordinate this system with RTA routes and schedules. **PS Transportation 3** Provide a continuous network of bicycle lanes and paths throughout the campus, connecting to off-campus bicycle routes.			**MM 4.14-1b: Travel Demand Management.** To reduce on- and off-campus vehicle trips and resulting impacts, the University will enhance its Transportation Demand Management (TDM) program. TDM strategies will include measures to increase transit and Shuttle use, encourage alternative transportation modes including bicycle transportation, implement parking policies that reduce demand, and other mechanisms that reduce vehicle trips to and from the campus. The University shall monitor the performance of campus TDM strategies through annual surveys.	

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
	PS Transportation 4 Over time, limit general vehicular circulation in the central campus, but allow transit, service and emergency vehicle access, and provide access for persons with mobility impairments. **PS Transportation 5** Provide bicycle parking at convenient locations.			**MM 4.14-1c: Transit Enhancement.** To enhance transit systems serving the campus, the University will work cooperatively with the RTA, and other local agencies to coordinate service routes with existing and proposed Shuttle and transit programs.	
	PS Transportation 6 Implement parking management measures that may include • Restricted permit availability • Restricted permit mobility • Differential permit pricing			**MM 4.14-1d: Sustainability and Monitoring.** The University shall review individual projects proposed under the amended 2005 LRDP for consistency with UC sustainable transportation policy and UCR TDM strategies to ensure that bicycle and pedestrian improvements, alternative fuel infrastructure, transit stops, and other project features that promote alternative transportation are incorporated into each project to the extent feasible.	
				MM 4.14-1e: Campus Traffic Impact Monitoring. The University will conduct traffic counts at key gateway locations on the campus every five years to determine the amount of traffic generated by the campus.	

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
				MM 4.14-1f: Mitigation Payments. The University's proportional share of the cost of the roadway improvements in **Table 4.14-18** is determined by dividing projected LRDP-related trips by the increase in background traffic between existing conditions and 2020. The projected proportional share percentage of each improvement is provided in **Table 4.14-18**, but the University's actual share will be determined based on actual project trips as established by monitoring under Mitigation Measure 4.14-1e. It is anticipated that at the time that the City proposes an improvement at an affected intersection and requests a proportional share payment, the University's proportional share will be calculated using the following formula: Campus Proportional Share % of mitigation project = (calculated impact contribution from EIR) * (traffic growth in year X/projected LRDP traffic growth in 2020) Where: X = the year the mitigation project is constructed Traffic growth in year X = gateway counts in year X -gateway counts in LRDP baseline year 2010 Projected LRDP traffic growth in 2020 = 2020 LRDP gateway forecasts from EIR - gateway counts in LRDP baseline year (2010) The University's payment of its proportional share of the cost of the improvements will be made available to the jurisdiction no later than the start of construction of when implementation of the improvement is reasonably certain.	

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
				Contributions made by the University that exceed its proportional share of the cost of mitigation or that mitigates more than its impact may be credited towards mitigation by the University of future impacts.	
Impact 4.14-2					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service under existing conditions. The impact would be significant.	Continue to implement **PS Land Use 4** and**7** and **PS Transportation 1-4,** and **6** as listed under **Impact 4.14-1.**	Continue to implement **PP 4.14-1** as listed under **Impact 4.14-1.**	Significant	Implement **Mitigation Measure 4.14-1b-f.**	Significant and unavoidable
Impact 4.14-3					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes on local roadways but not degrade roadway levels of service under 2020 conditions. The impact would be less than significant.	Continue to implement **PS Land Use 4** and **7**, and **PS Transportation 1-4,** and **6** as listed under **Impact 4.14-1.**	Continue to implement **PP 4.14-1** as listed under **Impact 4.14-1.**	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.14-4					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes on local roadways but not degrade roadway levels of service under existing conditions. The impact would be less than significant.	Continue to implement **PS Land Use 4** and**7** and **PS Transportation 1-4,** and **6** as listed under **Impact 4.14-1.**	Continue to implement **PP 4.14-1** as listed under **Impact 4.14-1.**	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.14-5					
Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. The impact would be significant.	None identified.	**PP 4.14-2** The Campus will periodically assess construction schedules of major projects to determine the potential for overlapping construction activities to result in periods of heavy construction vehicle traffic on individual roadway segments, and adjust construction schedules, work hours, or access routes to the extent feasible to reduce construction-related traffic congestion.	Significant	No project-level mitigation measure available.	Significant and unavoidable

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.14-6					
Implementation of the proposed 2005 LRDP Amendment 2 would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under 2020 conditions. The impact would be significant.	None identified.	None identified.	Significant	No project-level mitigation measure available.	Significant and unavoidable
Impact 4.14-7					
Implementation of the proposed 2005 LRDP Amendment 2 would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under existing conditions. The impact would be significant.	None identified.	None identified.	Significant	No project-level mitigation measure available.	Significant and unavoidable
Impact 4.14-8					
Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would not result in hazards due to design features or land use incompatibilities. The impact would be less than significant.	None identified.	**PP 4.14-4** The Campus shall provide design professionals for roadway and parking improvements with the Campus Design Guidelines and instructions to implement those elements of the guidelines relevant to parking and roadway design.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.14-9					
Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would not result in short-term vehicular hazards due to closure of traffic lanes or roadway segments. The impact would be less than significant.	None identified.	Continue to implement **PP 4.14-4** listed under **Impact 4.14-8.** **PP 4.14-5** To the extent feasible, the Campus shall maintain at least one unobstructed lane in both directions on campus roadways. At any time only a single lane is available, the campus shall provide a temporary traffic signal, signal carriers (i.e., flagpersons), or other appropriate traffic controls to allow travel in both directions. If construction activities require the complete closure of a roadway segment, the campus shall provide alternate routes and appropriate signage.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.14-10					
Construction associated with the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would not substantially increase pedestrian hazards due to closure of sidewalks or paths. The impact would be less than significant.	None identified.	**PP 4.14-6** For any construction-related closure of pedestrian routes, the Campus shall provide alternate routes and appropriate signage and provide curb cuts and street crossings to assure alternate routes are accessible.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.14-11					
Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant 2005 LRDP Planning Strategy, would not impair emergency access in the long-term. The impact would be less than significant.	Continue to implement **PS Transportation 4** listed under **Impact 4.14-1.**	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.14-12					
Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would not impair emergency access during the short-term. The impact would be less than significant.	None identified.	Continue to implement **PP 4.14-5** listed under **Impact 4.14-9.** **PP 4.14-8** To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, the Office of Architects and Engineers shall consult with the UCPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.14-13					
Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would not substantially increase demand for public transit. The impact would be less than significant.	Continue to implement **PS Transportation 1** listed under **Impact 4.14-1.**	Continue to Implement **PP 4.14-1** listed under **Impact 4.14-1.**	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Utilities					
Impact 4.15-1					
Development under the proposed 2005 LRDP Amendment 2 would generate an additional demand for water. However, the proposed project includes relevant Programs and Practices that will be implemented as individual development projects are proposed on the campus and will ensure that new or expanded water supply entitlements will not be required. The impact would be less than significant.	None identified.	**PP 4.15-1(a)** Improvements to the campus water distribution system, including necessary pump capacity, will be made as required to serve new projects. Project-specific CEQA analysis of environmental effects that would occur prior to project-specific approval will consider the continued adequacy of the domestic/fire water systems, and no new development would occur without a demonstration that appropriate domestic/fire water supplies continue to be available.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		PP 4.15-1(b) To further reduce the campus' impact on domestic water resources, to the extent feasible, UCR will (i) Install hot water recirculation devices (to reduce water waste) (ii) Continue to require all new construction to comply with applicable State laws requiring water-efficient plumbing fixtures, including but not limited to the Health and Safety Code and Title 24, California Code of Regulations, Part 5 (California Plumbing Code) (iii) Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time (iv) Install recovery systems for losses attributable to existing and proposed steam and chilled-water systems (v) Prohibit using water as a means of cleaning impervious surfaces (vi) Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time (This is identical to Hydrology PP 4.8-2(a).)			

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		PP 4.15-1(c) The Campus shall promptly detect and repair leaks in water and irrigation pipes. (This is identical to Hydrology PP 4.8-2(b).)			
		PP 4.15-1(d) The Campus shall avoid serving water at food service facilities except upon request. (This is identical to Hydrology PP 4.8-2(c).)			
Impact 4.15-2					
Development under the proposed 2005 LRDP Amendment 2 would generate an additional demand for water on the campus. However, the proposed project includes relevant Programs and Practices that ensure that the construction of new or expanded water treatment facilities will not be required. The impact would be less than significant.	None identified.	Continue to implement **PP 4.15-1(a)-(d)** listed under **Impact 4.15-1.**	Less than significant	**MM 4.15-2:** Should the City determine that construction of new water treatment facilities or expansion of existing water treatment facilities is required in order to accommodate campus demand, and the analysis of the environmental effects of constructing or expanding these facilities indicate that there would be potentially significant impacts requiring mitigation, the University will pay its proportional share of the cost of the environmental mitigation required for the project.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.15-3					
Development under the proposed 2005 LRDP Amendment 2 would generate additional wastewater on the campus which could require the construction of new or expanded wastewater treatment facilities. However, the construction and operation of the expanded wastewater treatment facilities would not result in significant environmental impacts. The impact would be less than significant.	None identified.	**PP 4.15-5** The Campus will continue to comply with all applicable water quality requirements established by the SARWQCB.	Less than significant	**MM 4.15-3:** Should the City determine that construction of new or expanded wastewater treatment facilities is required in order to accommodate campus flows, and the analysis of the environmental effects of constructing or expanding these facilities indicate that there would be potentially significant impacts requiring mitigation, the University will pay its proportional share of the cost of the environmental mitigation required for the project.	Less than significant
Impact 4.15-4					
Development under the proposed 2005 LRDP Amendment 2 could require the construction of new or expanded wastewater conveyance systems. However, the construction of new or expanded wastewater conveyance systems would not result in significant environmental effects. The impact would be less than significant.	None identified.	None identified.	Less than significant	**MM 4.15-4:** Should the City determine that construction of new wastewater conveyance facilities or expansion of existing conveyance facilities on and off campus is required in order to accommodate campus discharges, and the analysis of the environmental effects of constructing or expanding these facilities indicate that there would be potentially significant impacts requiring mitigation, the University will pay its proportional share of the cost of the environmental mitigation required for the project.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.15-5					
Implementation of the proposed 2005 LRDP Amendment 2 would require the construction of new stormwater drainage systems or the expansion of existing stormwater drainage systems. However, the construction of new or expanded stormwater drainage facilities would not result in significant environmental effects. The impact would be less than significant.	None identified.	None identified.	Less than significant	**MM 4.15-5:** Should the City determine that construction of new storm water facilities or expansion of existing storm water facilities on and off campus is required in order to accommodate campus discharges, and the analysis of the environmental effects of constructing or expanding these facilities indicate that there would be potentially significant impacts requiring mitigation, the University will pay its proportional share of the cost of the environmental mitigation required for the project.	Less than significant
Impact 4.15-6					
Development under the proposed 2005 LRDP Amendment 2 would generate solid waste, but not enough to require the expansion of the permitted capacity of a regional landfill. The impact would be less than significant.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.15-7					
Implementation of the proposed 2005 LRDP Amendment 2 would comply with all applicable federal, State, and local statutes and regulations related to solid waste. The impact would be less than significant.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.15-8					
Implementation of the proposed 2005 LRDP Amendment 2 could increase the demand for electricity, but would not require or result in the construction of significant new distribution facilities, the construction of which could cause significant environmental impacts. The impact would be less than significant.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.15-9					
Implementation of the proposed 2005 LRDP Amendment 2 could increase the demand for natural gas, but would not require or result in the construction of new gas production or transmission facilities, the construction of which could cause significant environmental impacts. The impact would be less than significant.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant
Impact 4.15-10					
Implementation of the proposed 2005 LRDP Amendment 2 would not result in the wasteful, inefficient, or unnecessary use of energy by UCR. The impact would be less than significant.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.15-11					
Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would generate an additional demand for water, but would not require new or expanded water supply entitlements or resources or result in the need for new or expanded entitlements. The cumulative impact would be less than significant.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant
Impact 4.15-12					
Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would not require the construction of new or expanded water treatment facilities. The cumulative impact would be less than significant.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant
Impact 4.15-13					
Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would not cause an exceedance of wastewater treatment requirements of the Santa Ana Regional Water Quality Control Board. The cumulative impact would be less than significant.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.15-14					
Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, could require the construction of new or expanded wastewater conveyance and treatment systems. However, the construction and operation of these facilities would not result in significant environmental impacts. The cumulative impact would therefore be less than significant.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant
Impact 4.15-15					
Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would require the construction of new stormwater drainage systems or the expansion of existing stormwater drainage systems. The cumulative impact would be less than significant.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.15-16					
Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would generate solid waste, but not enough to require the expansion of the permitted capacity of a regional landfill. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant
Impact 4.15-17					
Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would comply with all applicable federal, State, and local statutes and regulations related to solid waste. The cumulative impact would be less than significant.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.15-18					
Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, could increase the demand for electricity and require or result in the construction of new electricity generation or transmission facilities. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant
Impact 4.15-19					
Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, could increase the demand for natural gas and require or result in the construction of new gas production or transmission facilities. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.	None identified.	None identified.	Less than significant	No mitigation measure required.	Less than significant

Environmental Topic and Impact	2005 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Greenhouse Gas Emissions					
Impact 4.16-1					
Campus development under the proposed 2005 LRDP Amendment 2 would generate substantial GHG emissions both directly and indirectly. However, given UCR's existing commitments to reduce its GHG emissions by over 70 percent from business-as-usual projections by 2020, the impact would be less than significant.	None identified.	None identified.	Less than significant	**MM 4.16-1:** All projects developed under the amended 2005 LRDP shall be evaluated for consistency with the GHG reduction policies of the UCR CAP and the UC Policy on Sustainable Practices, as may be updated from time to time by the University. GHG reduction measures, including, but not limited to, those found within the UCR CAP and UC Policy identified in **Tables 4.16-9** and **4.16-10** shall be incorporated in all campus projects so that at a minimum an 8 percent reduction in emissions from BAU is achieved. It is expected that the GHG reduction measures in the UCR CAP will be refined from time to time, especially in light of the evolving regulations and as more information becomes available regarding the effectiveness of specific GHG reduction measures. As part of the implementation of the UCR CAP, the Campus will also monitor its progress in reducing GHG emissions to ensure it will attain the established targets	Less than significant
Impact 4.16-2					
Campus development under the proposed 2005 LRDP Amendment 2 would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The impact would be less than significant.	None identified.	None identified.	Less than significant	No project-level mitigation measure required.	Less than significant

Table 2.0-2
Summary Comparison of Project Alternatives

	Proposed Project Impact (Significant Before Mitigation)	No Project Alternative	Reduced SOM Alternative
4.2-1	Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies, would result in the conversion of approximately 37.3 acres of Prime Farmland to nonagricultural uses. The impact would be significant.	--	=/--
4.2-2	Cumulative development, including the proposed 2005 LRDP Amendment 2, would convert Prime Farmland to non-agricultural uses. The contribution of the amended 2005 LRDP to this cumulative impact would be cumulatively considerable.	--	=/--
4.3-1	Construction projects under the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in construction emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation. The impact would be significant.	=/--	=/--
4.3-2	Operation of the campus under the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would result in operational emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. The impact would be significant.	=/--	=/--
4.3-6	Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would conflict with or obstruct implementation of the applicable air quality plan. The impact would be significant.	=/--	=/--
4.3-7	Implementation of the proposed 2005 LRDP Amendment 2 would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard. The impact would be significant.	=/--	=/--

	Proposed Project Impact (Significant Before Mitigation)	No Project Alternative	Reduced SOM Alternative
4.10-2	Construction associated with the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, could generate and expose persons on campus to excessive groundborne vibration or groundborne noise levels. The impact would be significant.	=/--	=/--
4.10-7	Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in substantial temporary or periodic increases in ambient noise levels at locations on campus. The impact would be significant.	=/--	=/
4.10-8	Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in substantial temporary or periodic increases in ambient noise levels at locations off campus. This impact would be significant.	=/--	=/--
4.14-1	Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service under 2020 conditions. The impact would be significant.	=/--	=/--
4.14-2	Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service under existing conditions. The impact would be significant.	=/--	=/--
4.14-5	Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. The impact would be significant.	=/--	=/--
4.14-6	Implementation of the proposed 2005 LRDP Amendment 2 would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under 2020 conditions. The impact would be significant.	=/--	=/--

	Proposed Project Impact (Significant Before Mitigation)	No Project Alternative	Reduced SOM Alternative
4.14-7	Implementation of the proposed 2005 LRDP Amendment 2 would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under existing conditions. The impact would be significant.	=/--	=/--

KEY

= Impact similar to proposed project

-- Impact less than proposed project

+ Impact greater than proposed project

=/-- Impact slightly reduced but still significant

3.0 PROJECT DESCRIPTION

3.1 INTRODUCTION

This section of the EIR presents details of the proposed Amendment 2 to the 2005 University of California, Riverside (UCR) Long Range Development Plan (LRDP). In 2005, The Regents approved the UCR 2005 LRDP which proposed to accommodate a total enrollment of 25,000 students[1] by the academic year 2015/16 with at least 50 percent of the students housed on the campus or in campus-controlled housing. The 2005 LRDP projected a need for the development of approximately 7.1 gross-square-feet (gsf) of new academic, housing, and support space to accommodate enrollment growth and meet UCR's academic, research, and professional program needs. The 2005 LRDP also included a land use map that designated land use areas within the campus to guide the siting of the future physical development.

The proposed 2005 LRDP Amendment 2, which is the subject of this EIR, involves changes to the 2005 LRDP Land Use Map and changes to the text of the 2005 LRDP. These changes are summarized below and described in more detail in **subsection 3.4** of this project description.

- The proposed Land Use Map changes include: (1) change in the Land Use Designation of a 38.7 acre site located at the northeast corner of Iowa Avenue and Martin Luther King, Jr. Boulevard (MLK) on the West Campus from *Family, Apartment Housing and Related Support (Including Child Care)* as well as *Parking* and *Academic* to *School of Medicine (SOM)* to allow a medical school and associated uses to support the school on the site; (2) change in the location of two future parking facilities and deletion of the location of one parking facility in the West Campus academic core; (3) modification to the major open space configuration in the West Campus academic core to include the reconfiguration of the "Grove" concept to the "Gage Canal Mall" concept, and the inclusion of the West Campus Mall; (4) the extension of the 100-foot-wide landscape buffer along the north side of MLK between Cranford Avenue and Chicago Avenue; (5) extension of the Northwest and Southwest Malls from Cranford Avenue to Chicago Avenue; (6) incorporation of previously approved land use amendments and map changes into the 2005 LRDP Land Use Map, including incorporation of

[1] Derived from 1 Full-Time Equivalent (FTE) = 1 Headcount. UCR uses a conversion rate of 1 FTE (0.95 rounded up) = 1 Headcount, and for the purposes of the 2005 LRDP and for the proposed amendment, 1 FTE = 1 Headcount with the "student" taking full course loads every quarter with graduation in four years.

recently acquired housing on the East Campus;[2,3] and (7) re-designation of the land uses of several parcels to accommodate land uses displaced by the major changes listed above, including the designation of the Campus Reserve site as *Family, Apartment Housing and Related Support (Including Child Care)* and *Open Space.*[4]

- The proposed text changes include: (1) extension of the 2005 LRDP horizon year from 2015/16 to 2020/21; (2) increase in the maximum square footage accommodated in the 2005 LRDP from 11.8 million gross square feet (gsf) to 14.9 million gsf (due to the building space required for the medical school); (3) design criteria for the *SOM* precinct; (4) update of the Circulation and Parking Chapter to reflect changes to the existing and future transit service and proposed Transportation Demand Management Program; (5) update of the existing Resource Conservation and Environmental Chapter to include information on the UC Policy on Sustainable Practices, UCR Sustainability and Climate Action Plans; and (6) update of the *Parking* land use designation in the 2005 LRDP to allow for retail or office as permitted uses within all proposed parking structures on the campus.

The proposed 2005 LRDP Amendment 2 would not add to the total enrollment projected in the 2005 LRDP but would increase the total daily population on the campus as a result of the employees and visitors (patients) associated with the SOM that were not projected in the 2005 LRDP. The proposed Amendment 2 to the 2005 LRDP would not change any of the existing land use designations on the East Campus except for the inclusion and designation of recently acquired housing as residential land uses under the LRDP and a previously approved map change.

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2 Previously Approved Land Use Amendments to the 2005 LRDP: (1) a 3.25-acre deed restriction in the Agricultural Operations fields south of MLK (2005 LRDP Amendment 1, that was approved by the Office of the President on July 26, 2006; (2) an amendment to the 2005 LRDP to expand the *Campus Support* land use designation to accommodate the Environmental Health & Safety (EH&S) facility in the northern portion of the parcel located at the northeast corner of Canyon Crest Drive and MLK. The approval changed the size of the *Campus Support* and *Parking* acreages to accommodate the proposed facility. Approved by the Regents in July 2008 with the EH&S design approval; and (3) an amendment to the 2005 LRDP to delete the *Athletics and Recreation* land use proposed accompanying *Family, Apartment Housing and Related Support Including Child Care" (Housing)* at the northwest corner of Big Springs Road and Valencia Hill Drive to accommodate the Glen Mor 2 Student Housing Development. This was approved by the Regents in May 2011.

3 Previously Approved Map Changes to the 2005 LRDP: (1) acquisition of a parcel located at the northwest corner of Canyon Crest Drive and Linden Street containing 220 apartments in 18 2-story buildings for student housing (Falkirk). Approved by The Regents on March 14, 2007; and (2) acquisition of a parcel located on the southwest corner of Canyon Crest Drive and Linden Street containing 136 apartments in nine 2-story buildings for student housing (Oban). This was approved by The Regents in August 2009.

4 Overall, the re-designation of parcels on the West Campus would result in the loss of 4.8 acres of *Academic*, 8.1 acres of *Special Academic Building Area*, 37.3 acres of *Campus Reserve*, and 6.2 acres of *Support* and the addition of 8.9 acres of *Family, Apartment Housing and Related Support (Including Child Care)*, 1.5 acres of *Athletic and Recreation*, 21.8 acres of *Open Space*, 3 acres of *Parking*, and 38.7 acres of *School of Medicine*. Overall, the LRDP amendments and map changes on the East Campus would result in the loss of 4.7 acres of *Athletics and Recreation* and 0.5 acre of *Parking* and the addition of 18.9 acres of *Family, Apartment Housing and Related Support (Including Child Care).*

3.2 PROJECT LOCATION

The UCR campus is located in the City of Riverside, 1.5 miles east of downtown Riverside and just west of the Box Springs Mountains. The City of Riverside is located within the County of Riverside, in a larger geographic area known as the Inland Empire, which includes western Riverside and San Bernardino counties. **Figure 3.0-1, Regional Context,** shows the location of the campus in a regional context. The campus is generally bounded by University Avenue and Blaine Street on the north, Watkins Drive and Valencia Hill Drive and its extension south on the east, a line extending east from Le Conte Drive on the south, and Chicago Avenue on the west. The campus is bisected diagonally by the I-215/SR-60 freeway. **Figure 3.0-2, Local Setting,** shows the local setting of the campus.

The campus consists of approximately 1,144.4 acres, with approximately 614.5 acres east of the freeway (East Campus) serving as the undergraduate academic core and the location for the majority of existing academic, housing, and support facilities. The portion of the campus west of the freeway (West Campus) comprising approximately 529.9 acres is primarily occupied by agricultural teaching and research fields, the University Extension (UNEX), Highlander Hall (office facility), the International Village (third-party UCR student housing complex), Human Resources (office building), and a large surface parking lot (Parking Lot No. 30). A City of Riverside electrical substation also occupies an approximately 0.9-acre site directly west of the freeway at the northern edge of Parking Lot No. 30 while a Caltrans service yard occupies a 4.1-acre triangular parcel directly west of the freeway at the eastern terminus of Everton Place. The Gage Canal, a historic citrus grove irrigation waterway, traverses the West Campus north to south. **Figure 3.0-3, Campus Map,** provides a map of the campus.

Land uses surrounding the campus are primarily residential, with some commercial uses along the major streets, with University Avenue as the primary commercial corridor between the UCR campus and downtown Riverside. Existing development east of UCR to the base of the Box Springs Mountains is predominantly single-family residential with some multi-family and limited commercial. Land to the south of the West Campus area is also largely developed with single-family residences, with a multifamily residential and commercial development in the vicinity of the intersection of Central Avenue and Canyon Crest Drive. The area west of the campus contains a mix of land uses, including single and multifamily residential, vacant land, limited agriculture, and commercial uses. The area located generally north of University Avenue and west of Canyon Crest Drive contains a mixture of mostly multi-family residential, industrial, public (i.e., churches), institutional (i.e., schools), and commercial uses, as well as vacant land. **Figure 3.0-4, Campus Aerial**, shows land surrounding the campus.

Blaine Street generally forms the northern border of the East Campus. Land uses north of Blaine Street consist of multi-family residential and commercial uses. Watkins Drive forms the northeastern edge of

the East Campus and is separated from mostly one-story single-family residential uses (to the northeast) by an active rail line and a California Department of Water Resources pipeline and easement. Valencia Hill Drive fronts the eastern edge of the campus (north of Big Springs Road), with one-story single-family residential uses along the northern portion and two-story multi-family residential structures just north and south of Big Springs Road west of Watkins Drive. South of Big Springs Road, the campus directly abuts one-story single-family residences. Further south (e.g., south of Frost Court and Picacho Drive), the eastern campus edge is fronted by undeveloped hilly terrain, with scattered one- and two-story homes located further east along Watkins Drive. The I-215/SR-60 freeway borders the southern edge of the East Campus. In the vicinity of the campus the freeway has three mixed-flow lanes and one HOV lane in each direction. Land uses to the west of the East Campus along Linden Avenue and Blaine Streets are occupied primarily by two and three-story multi-family residential uses.

Everton Place and its extension west one block south of University Avenue borders the West Campus on the north. This corridor includes a collection of retail shops, fast food outlets, and hotels and motels, with most buildings one to two stories in height, although some of the more recent development is three stories and even six stories (the Marriot Courtyard Hotel) in height. The I-215/SR-60 freeway borders the eastern edge of the West Campus. As mentioned above, in the vicinity of the campus the freeway has three mixed-flow lanes and one HOV lane in each direction. Le Conte Drive and its extension east forms the southern boundary of the West Campus, with one-story single-family homes located across the street from and backing up to the campus. Chicago Avenue, a four-lane city arterial, forms the western edge of the West Campus, with single-family residential uses as the predominant use on the western side of the street south of MLK and commercial uses north of MLK.

3.3 PROJECT OBJECTIVES

The 2005 LRDP EIR listed a number of academic, physical, and operational objectives for UCR. All of those objectives would still apply to campus development under the 2005 LRDP amended by the proposed Amendment 2. In addition to those, the specific objectives of the proposed 2005 LRDP Amendment 2 are to:

- Serve the health care and medical education needs of the Inland Empire residents surrounding the Riverside campus and improve the health of the medically underserved throughout the inland Southern California region by facilitating the development of a school of medicine.
- Provide a site for a new school of medicine at a location that would allow the school of medicine to draw upon the intellectual, technological, and material resources of the UCR's existing and future related programs and facilities, and facilitate academic and research synergies.

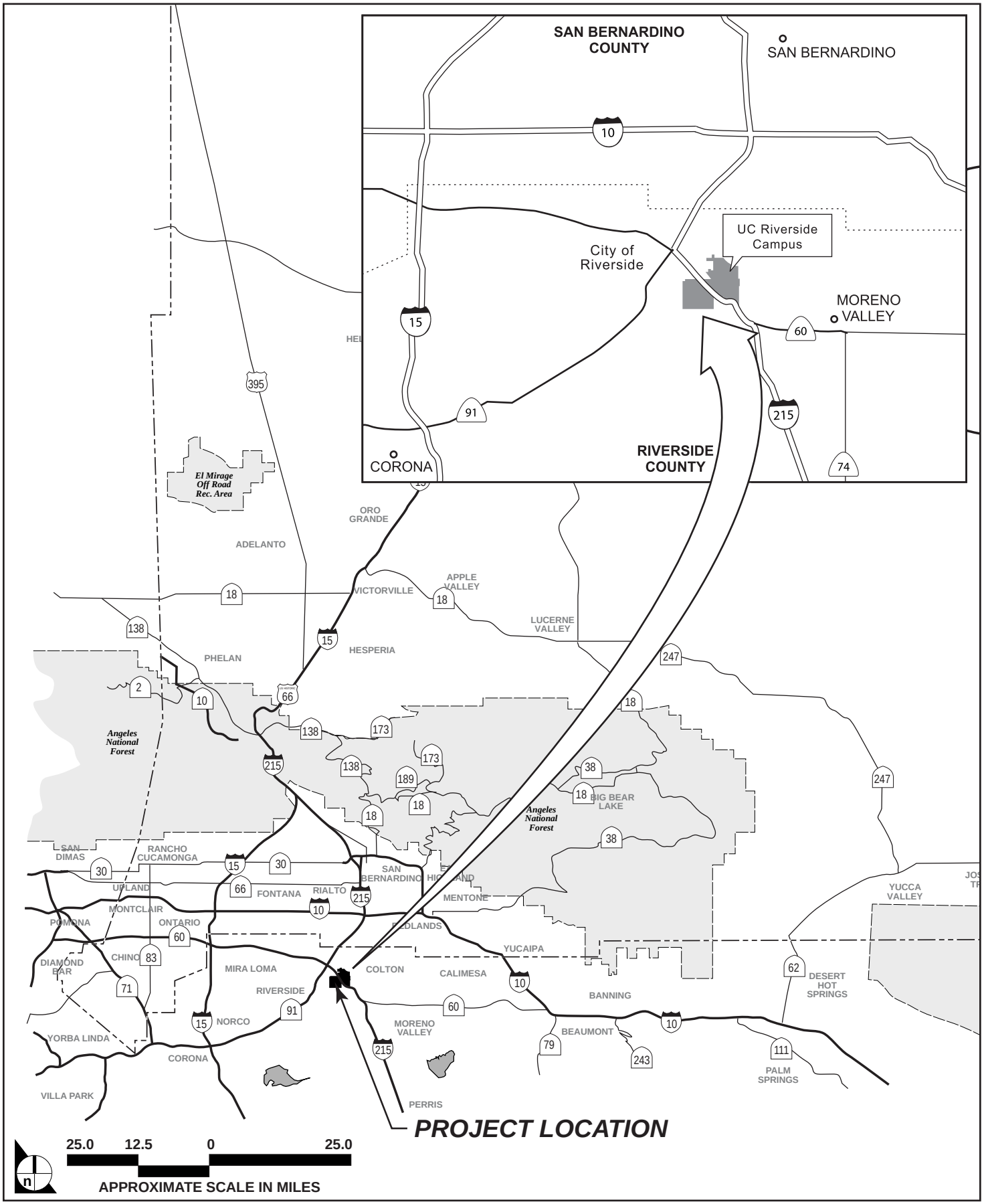
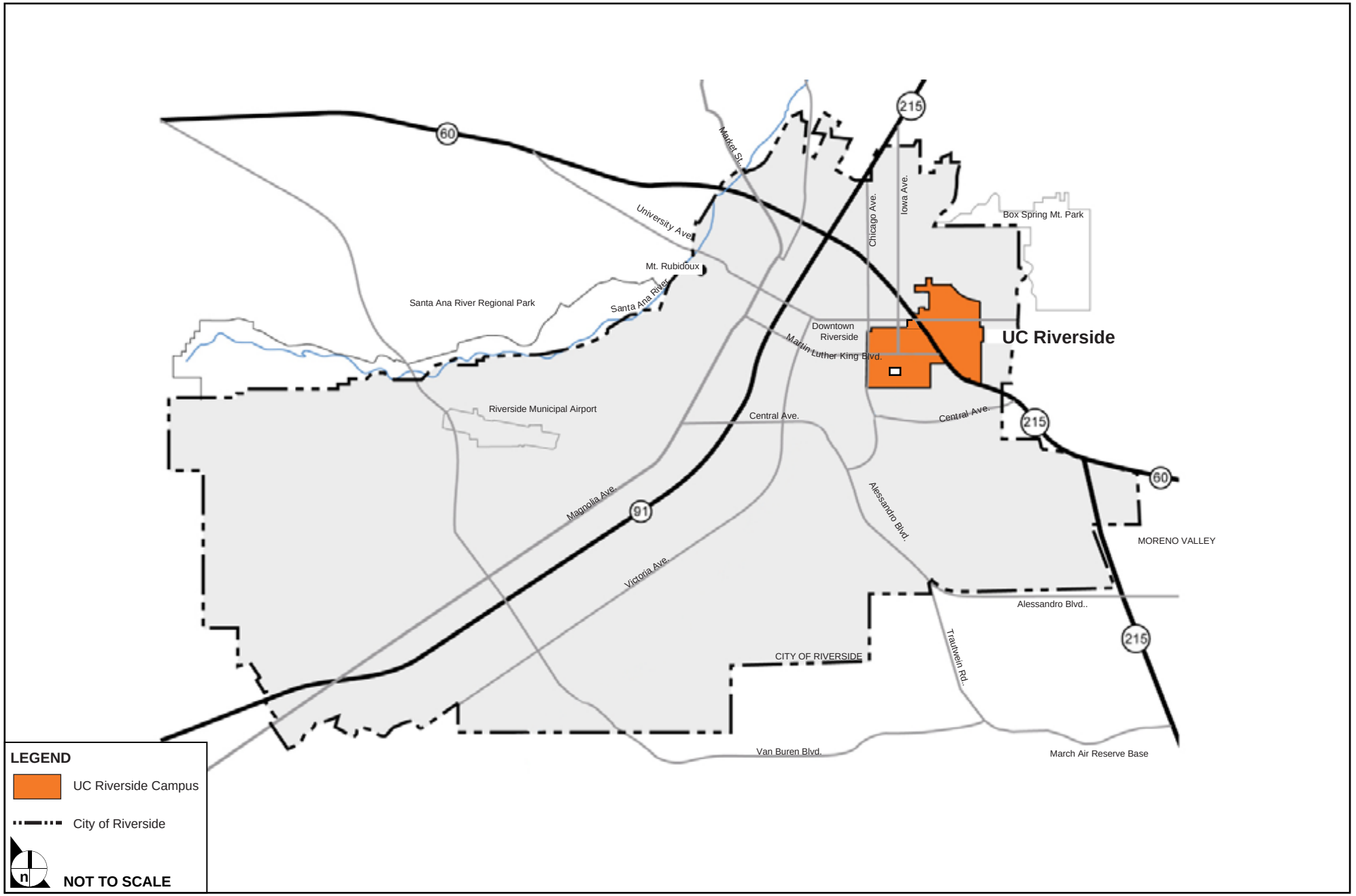


FIGURE **3.0-1**

Regional Context

1031-001•01/10

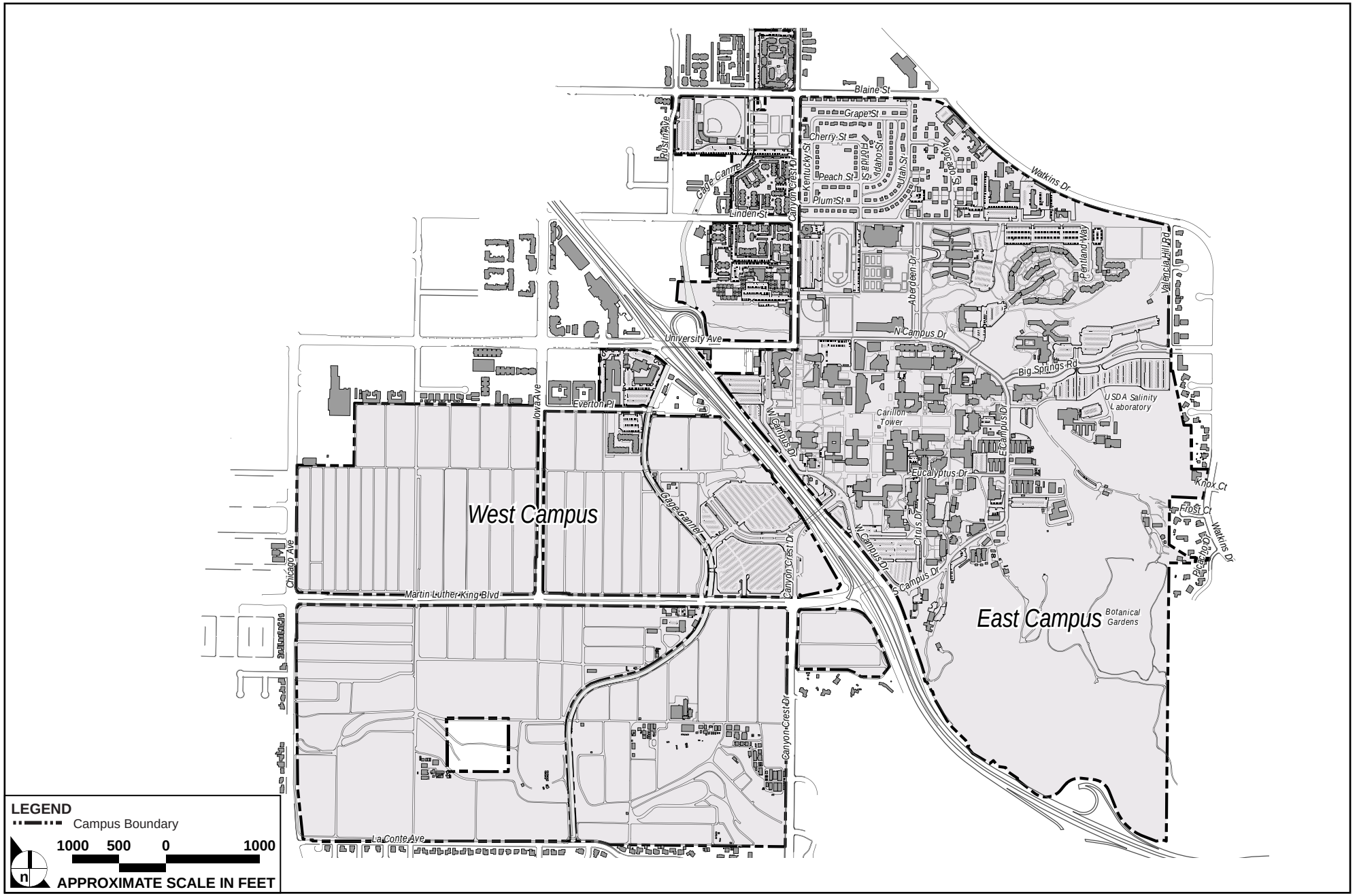


SOURCE: UCR LRDP 2005

FIGURE **3.0-2**

Local Setting

1031-001•01/10

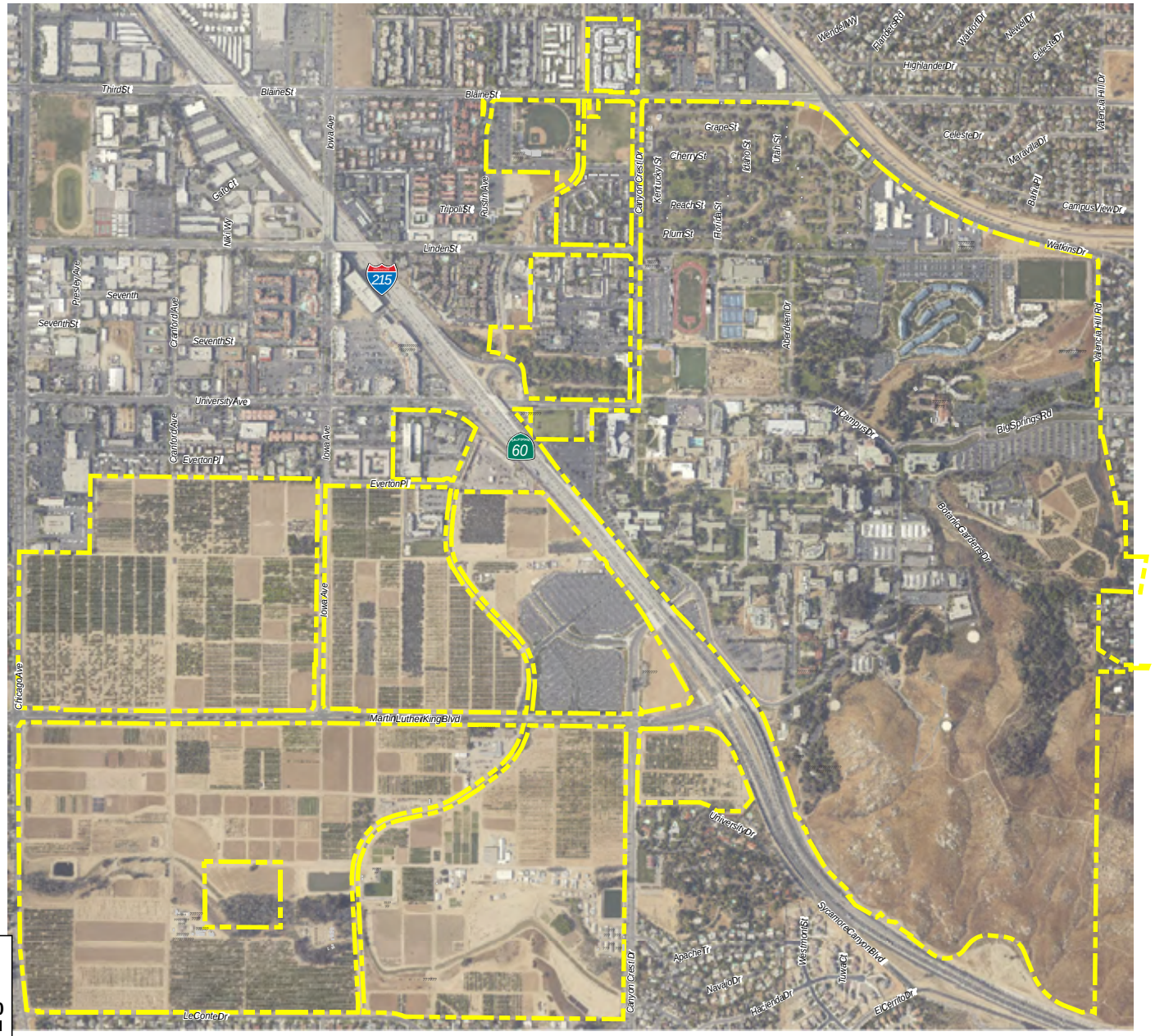


SOURCE: UCR – 2010

FIGURE **3.0-3**

Campus Map

1031-001•09/10



SOURCE: UCR – 2010, Impact Sciences, Inc – January 2011

FIGURE **3.0-4**

Campus Aerial

- Minimize travel distance between the East Campus academic core and the West Campus school of medicine by providing for enhanced pedestrian, bicycle, and campus shuttle pathways/routes; and also be easily accessible to the Riverside community and the Inland Empire.

- Provide improved locations for future parking structures that re-distribute parking around the West Campus academic core to provide reasonable access from parking to all areas within the academic core and provide noise buffers between the West Campus academic core and the I-215/SR-60 freeway.

- Facilitate a pedestrian link over the freeway between East and West Campuses through the construction of a pedestrian bridge that connects two future parking structures with ADA compliance provided by the elevators within the parking structures.

- Facilitate the development of better-designed Open Space on the West Campus that would allow for more buildings to have frontage on the proposed Open Space as well as serve as a transportation corridor from the southern boundary of the West Campus to the northern boundary.

- Better utilize the available land base on the West Campus by increasing the FAR in the SOM precinct to 1.9 and the West Campus academic core to 1.6 to retain a compact academic core in relationship to each other and also with the East Campus academic core. The East Campus academic core would retain the 1.0 FAR in the 2005 LRDP.

3.4 PROJECT DESCRIPTION

As noted above, the proposed 2005 LRDP Amendment 2 primarily involves (1) changes to land use designations on the campus's 2005 LRDP Land Use Map to facilitate the development of a medical school, and secondarily other land use changes including the relocation of parking structures, and an improved *Open Space* concept for the West Campus, and (2) changes to the text of the 2005 LRDP. The existing 2005 LRDP Land Use Map is presented in **Figure 3.0-5, 2005 LRDP Land Use Map**. The proposed 2005 LRDP Amendment 2 Land Use Map depicting the proposed changes is provided in **Figure 3.0-6, Proposed 2005 LRDP Amendment 2 Land Use Map.** Each element of the proposed amendment to the 2005 LRDP is described in greater detail below.

3.4.1 Proposed Land Use Map Changes

3.4.1.1 School of Medicine

In 2005, The Regents certified the 2005 UCR LRDP EIR and adopted the 2005 LRDP, a plan that would guide the development and growth of the campus through the 2015/16 academic year. The 2005 LRDP provided for the growth of the campus up to an enrollment level of 25,000 students and 10,540 associated faculty, staff and visitors for a total campus population of 35,540. The 2005 LRDP also provided for the growth in development of up to 7.1 million gsf of new academic buildings, support facilities, and student housing to accommodate at least 50 percent of the students on campus. The 2005 LRDP set aside a *Campus Reserve* land use designation on the far west side of the campus at the northeast corner of Chicago

Avenue and MLK. This site comprises approximately 37.3 acres and was set aside to accommodate future campus needs.

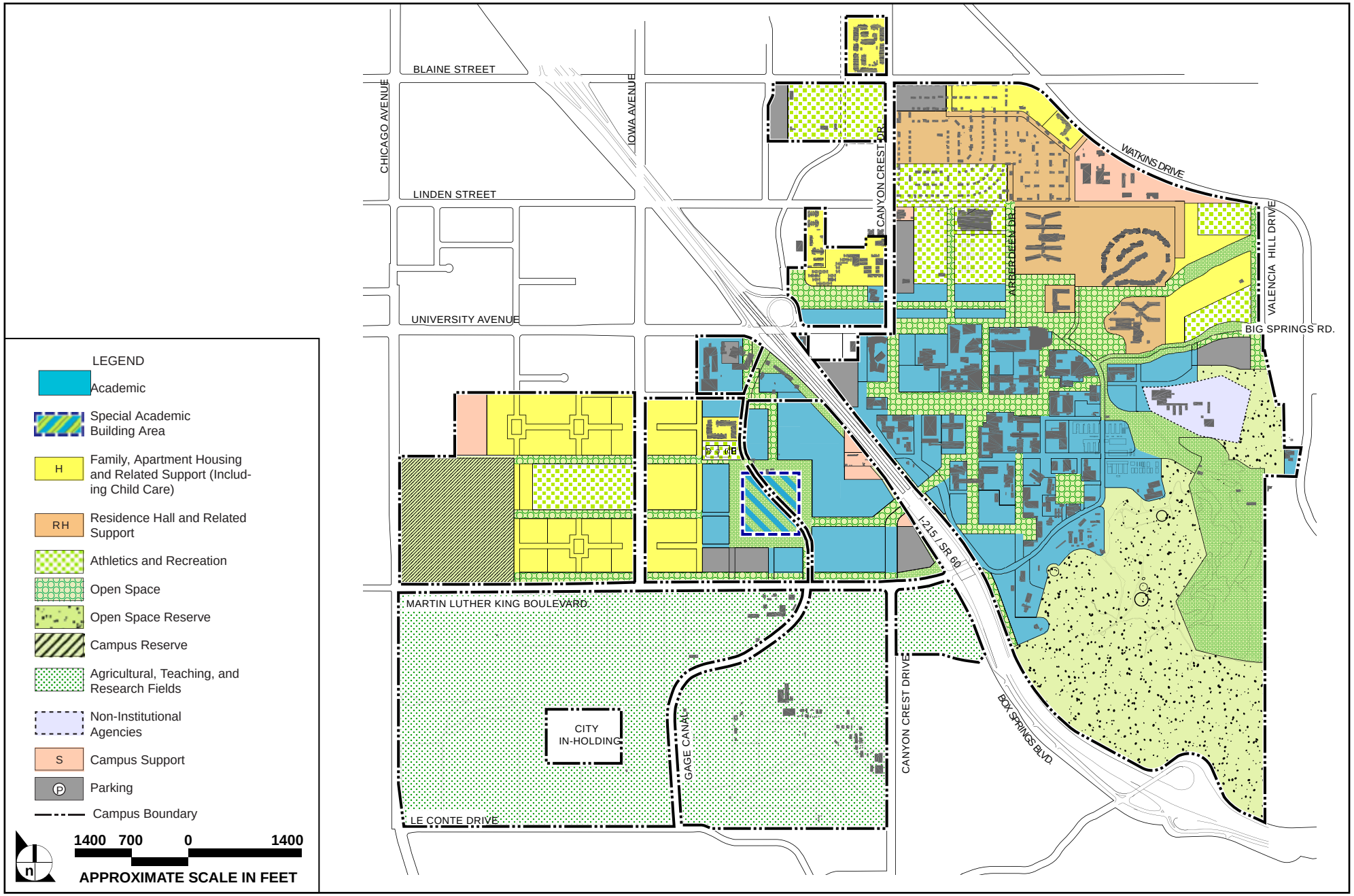
In 2008, following the adoption of the 2005 LRDP, the Campus prepared a campus document called the Campus Aggregate Master Planning Study (CAMPS), the focus of which was to bring all of the neighborhood plans and planning studies together in one document in support of the 2005 LRDP and to test the ultimate capacity of the West Campus at a floor area ratio (FAR) of 1.0. CAMPS also provided a cohesive concept to guide the campus through the initial development phases of a medical school which UCR was in the beginning stages of programming. The medical school was identified as the future use of the *Campus Reserve.* CAMPS also illustrated a conceptual layout for the rest of the development on the West Campus to build out.

In 2008, The Regents authorized the establishment of a four-year medical school at UCR. This action was part of the expansion of UC's medical education programs which included increasing enrollments at existing medical schools and planning for at least one new UC school of medicine. It is anticipated that the UCR medical school will serve the Inland Empire surrounding the Riverside campus and improve the health of the medically underserved throughout the inland Southern California region.

In 2010, with a new Dean for the medical school, UCR re-evaluated the CAMPS study and the use of the *Campus Reserve* site for the medical school. The Campus concluded that a 38.7-acre site located at the northeast corner of Iowa Avenue and MLK would be a better location for the school of medicine due to its proximity to the East Campus academic core, which would help promote academic and research synergies and resource efficiencies.

SOM Land Use Designation

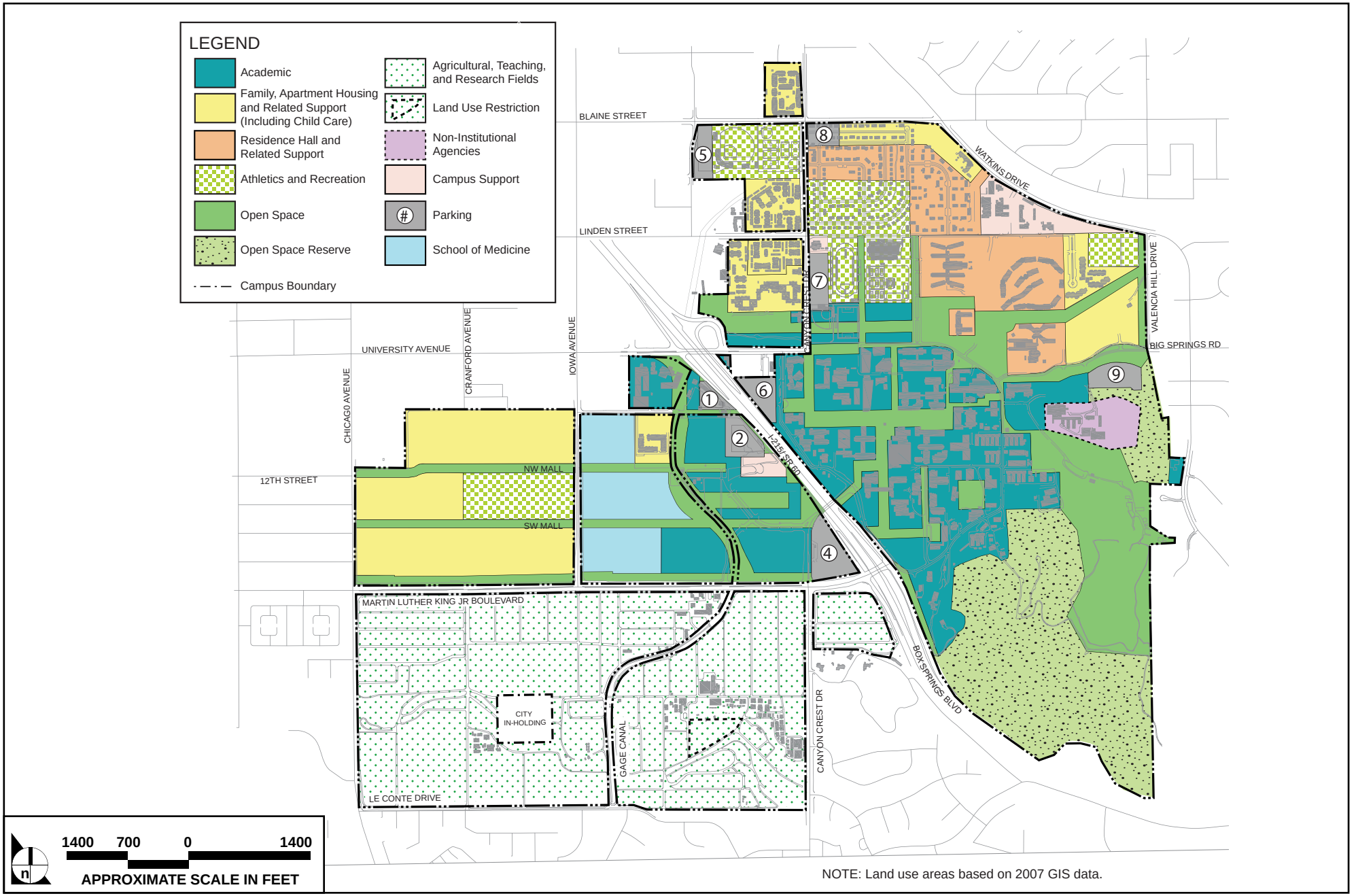
As a step towards the development of a school of medicine, the proposed 2005 LRDP Amendment 2 would change the land use designation of a 38.7-acre portion of the West Campus located at the northeast corner of Iowa Avenue and MLK from *Family, Apartment Housing with Related Support (including Child Care)*, *Parking* and *Academic* to *School of Medicine or SOM*, a new UCR land use designation. Permitted uses within this new land use designation include teaching, research, administration, ambulatory care, medical offices, medical school support (auditorium, library, related retail, etc.), utility infrastructure, support yard, circulation, and parking. Surface and structured parking would serve the medical school students, faculty, staff, employees, patients, and visitors. The previously designated land uses for the proposed new *SOM* site (i.e., the land uses authorized in the 2005 LRDP, i.e., *Family, Apartment Housing with Related Support (including Child Care)*, *Parking* and *Academic*) are shown in **Figure 3.0-5**. The proposed *SOM* designation is shown in **Figure 3.0-6**.



SOURCE: UCR 2005 LRDP - November 2005

FIGURE **3.0-5**

2005 LRDP Land Use Map



SOURCE: UCR 2005 LRDP Amendment 2 – 2011

FIGURE **3.0-6**

Proposed 2005 LRDP Amendment 2 Land Use Map

School of Medicine Development Program

As listed in **Table 3.0-1, School of Medicine Components**, a total of approximately 3.1 million gsf of new development would be associated with the proposed medical school based on the 2005 medical school proposal to The Regents. All of this building space is in addition to the 7.1 million-gsf development envelope estimated to accommodate full implementation of the 2005 LRDP.

Table 3.0-1
School of Medicine Components

Land Use	Area (sq. ft.)
Medical Education Building	144,000
Medical Research Laboratories	482,715
Vivarium Facility	40,100
Ambulatory Care Facilities	250,000
Medical Office Buildings	775,000
Support Yard	46,000
Parking	1,323,350 (3,781 stalls)
Total	**3,061,165**

Source: UCR 2005 SOM Proposal

SOM Facilities

The medical school is anticipated to consist of a number of new buildings, spaces, and infrastructure that are described below. No hospital is currently planned as part of the medical school. The medical school would use area hospitals for its residency program. Buildout of the medical school would occur over time and for purposes of analysis in this EIR it is assumed that full buildout would occur by 2020.

Medical Education and Administration Building

The medical education and administration building would total approximately 144,000 gsf. The facility would include uses such as lecture halls, gross anatomy suite, teaching laboratories, clinical skills center, simulation center, library, auditorium, administration, student services, and building support space.

Medical Research Laboratories

The medical research laboratories would total approximately 482,700 gsf and would employ up to 95 Full-Time Equivalent (FTE) principal researchers. Research components in these facilities would include research lab space, lab support space, and lab core space. Non-research components would

include office/meeting space, conference center and other assignable support space (e.g., loading, food service, etc.)

Vivarium Facility

The vivarium facility would total approximately 40,000 gsf. The facility would include a holding area (including quarantine), core facilities, imaging, surgery and laboratory, and corridors. The facility would accommodate 55 FTE principal investigators with an average of 500 rodents per investigator for a total of 27,500 rodents.

Ambulatory Care Facilities

The ambulatory care facilities would total approximately 250,000 gsf and employ up to 150 primary care and select specialty physicians and approximately 720 staff. The facilities would include general practice clinics, outpatient surgery, imaging, a pharmacy, and a laboratory.

Medical Office Buildings

The medical offices would total 775,000 gsf of building space and accommodate approximately 2,800 employees. These facilities would be constructed based on the demand for such space. For purposes of analysis in this EIR, it is assumed that all medical office building space will be built and occupied by 2020.

Parking

Parking to support the uses listed above would consist of surface parking lots in the interim and ultimately two parking structures. Together the two parking structures would provide approximately 3,780 spaces.

Infrastructure

Infrastructure improvements to support the uses listed above would consist of a new Central Plant that would be located on 4.6 acres set aside for *SOM* and *Academic* support. The Central Plant would be located adjacent to the medical school buildings and would house chillers and boilers to provide chilled water, heating hot water, and steam to the SOM and other academic facilities on the West Campus. Other infrastructure improvements would include roadways for internal circulation, the installation of underground utilities and connections to municipal services, and incidental hardscape and landscape improvements.

SOM Program Adjacencies

The *SOM* precinct would be divided into three programmatic areas focused around the SOM Quad, a major open space area at the "core" or center of the precinct. The northern most area of the precinct would be located at Iowa Avenue and between Everton Place and the Northwest Mall and International Student Housing. It would be developed with parking, medical office, and a support yard. The central area of the precinct would be located between Iowa Avenue, the Northwest Mall, Gage Canal Mall, and Southwest Mall. Teaching, research, administrative, and ambulatory care functions would be located in this area. The southern area would be located between Iowa Avenue, the Southwest Mall, West Campus Academic, and MLK and would be developed with parking and medical office buildings.

SOM Site Capacity and Density

In order to meet future medical school needs, the SOM building heights and development density will be greater than the heights and densities for the East and West Campuses as authorized in the 2005 LRDP and will result in new relationships between buildings and key open spaces. All future buildings would be at a minimum at least five stories in the SOM land use designation area to meet the SOM immediate and future functional and programmatic needs and objectives.

Buildings along MLK and surrounding the SOM Quad could be up to six or seven stories to accommodate the program density. A medical school "signature" building could step up to 12 stories in order to reinforce its prominence, location, and importance as an icon building. Parking structures located at the perimeter of the precinct would be at least seven or eight stories above grade and would utilize the roof deck for parking. At buildout, the SOM will have a density of approximately 1.9 FAR.[5]

SOM Parking and Circulation

Parking

Parking at the medical school will be informed by the following strategies:

Surface Parking

Initially, surface parking lots will be constructed to serve the school. Over time, pockets of surface parking located near buildings will remain for short-term parking, ADA spaces, reserved spaces, transit stops, etc.

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5 FAR is the arithmetic relationship of the total square feet of a building to the square footage of the land area.

Structured Parking

Parking structures are required to support the medical school program. Construction of parking structures will be phased concurrent with the parking supply needed to serve the medical school. The following strategies will be used to site the parking structures:

- Locate parking structures at major streets and intersections for easy public access.
- A parking structure serving medical research, administration, teaching, and ambulatory care should be easily accessed from Iowa Avenue and Everton Place.
- A parking structure serving outpatient care, including medical office buildings, specialized institutes, and future program expansion should be easily accessed from MLK and Iowa Avenue.

Patient and Visitor Parking

A range of parking types will be provided to serve patient care facilities with patient drop off/pick up at building entries and visitor parking no more than 0.5 mile away from the facilities.

Disabled Parking

Disabled parking would be provided for every building in the *SOM* precinct, with disabled access to be provided from the vehicle to the building entry.

Medical Office Building Parking/Specialized Institutes

This use would either share parking with the SOM or build stand-alone parking to serve its own programs.

Circulation

Access

Vehicular access to the medical school will be provided primarily by Iowa Avenue while pedestrian and campus transit access to the medical school will be provided via the Northwest and Southwest Malls from Iowa Avenue and the West Campus Academic core as well as the East Campus. Limited access could be provided from Everton Place as well as MLK. Public roadways and internal streets will be used to provide service and emergency access.

Shuttles

The West Campus is currently served by the Bear Runner shuttle, which is operated by the Riverside Transit Authority (RTA). UCR would increase RTA shuttle service frequency and service area to ensure that the medical school and the rest of the West Campus are connected to the East Campus. Shuttle routes and schedules will be adjusted to meet the needs of the medical school population.

Public Transit

The UCR campus is currently served by RTA routes which provide local service as well as provide commuter service between the UCR campus and Montclair Transcenter, Temecula, Banning, and Hemet, respectively. Several of these routes, currently operate directly adjacent to the West Campus. In addition, several routes which do not provide direct service to the campus, but operate along Chicago Avenue, are directly adjacent to the West Campus. UCR will work with the RTA to extend these routes to the medical school where appropriate.

Alternative Transportation

The medical school will build on UCR's existing Transportation Demand Management program by providing expanded incentives, services, and infrastructure support to offer a wider variety of mode choices. Additional core and support strategies to be offered by the medical school include:

- Expand existing UPASS program to include medical school students, faculty, and staff.
- Continue to adjust parking rates to cover the full cost of providing parking spaces.
- Expand the car-sharing program to include the medical school, which will be available to students, faculty, and staff.
- Modify and/or add to shuttle service to provide quick and direct access between the medical school and the East Campus.
- Provide bicycle facilities, including bicycle racks and lockers as well as shower facilities.
- Establish preferential parking spaces for carpools and vanpools.

SOM Population

An estimated daily population of about 6,253 persons would be associated with the medical school. **Table 3.0-2, School of Medicine Population,** presents the number of students, faculty, staff, employees, and patients/visitors that are expected to be associated with the medical school. At full development, the medical school would enroll a total of 400 medical students. As these students are included in the overall

projected enrollment of 25,000 students, therefore the actual increase in population growth anticipated with the medical school will be 6,253 – 400 (students) or a total increase in campus population attributed to the SOM at 5,853. The first class of 100 students is anticipated to start in 2012 with an additional 100 students per year up to a total of 400 students. For purposes of analysis in this EIR, it is assumed that the maximum daily population of 6,253 persons, including the 400 students will be at the *SOM* site by 2020.

Table 3.0-2
School of Medicine Population

Type of Population	Number
Students [a]	400
Doctors	150
Principal Investigators	150
Medical Education/Research/Administration [b]	838
Medical Office Employees [c]	2,794
Ambulatory Care [c]	719
Patients and Visitors [d]	1,202
Total	**6,253**

Source: UCR 2005 LRDP, derived from CO Architects "Order of Magnitude Construction Costs" memorandum to UCR Capital and Physical Planning, October 2007; UCR West Campus Infrastructure Development Study, April 2008 (WCIDS); UCR SOM Infrastructure Phase 1, March 2009; comparable Medical Research, Medical Office, and Ambulatory Care data UCSD Institutional Research and Health Sciences Planning, July 2009; UCR 2005 LRDP Amendment 2, August 2010.

a Students include 400 medical students, (graduate students included in Medical Education/Research; post-docs included in faculty, staff).

b Medical Education/Research includes teaching, administration, research labs, research support, and vivarium.

c Based on employees per square foot.

d Visitor and Patient population estimated to be 25% of student, faculty, and staff population, where applicable, since some facilities have neither patients nor visitors.

3.4.1.2 West Campus Parking Structures

The 2005 LRDP designated the *Parking* land use designation for parking structures at four locations on the West Campus and several locations on the East Campus. The proposed 2005 LRDP Amendment 2 would not change the total number of parking spaces provided in parking structures, but it would change the location of two of the structures, delete the location of one structure on the land use map, and redistribute the parking spaces from the deleted parking structure among the remaining three West Campus structures. The locations of the four previously planned parking structures are shown in **Figure 3.0-5**. The locations of the three planned parking structures are shown in **Figure 3.0-6.**

Parking Structure No. 1 was previously proposed at a site adjacent to University Avenue within the planned academic area next to the existing UNEX building west of the Gage Canal. CAMPS recommended that the location of this parking structure on the West Campus be revised to a location east

of the Gage Canal on the north side of Everton Place. The site of this parking structure is currently occupied by the Caltrans service yard.[6] Development of this site with a parking structure would require acquisition of the Caltrans property by UCR in the future.

A pedestrian bridge over the I-215/SR-60 freeway half way between the under-crossings at University Avenue and Canyon Crest Drive was proposed in the 1990 LRDP and suggested in the 2005 LRDP to connect the East and West Campus areas. However, the cost of implementing the proposal and difficulties inherent in providing universal access made the proposal infeasible. The bridge was again considered by UCR in CAMPS as a way of linking the East and West Campuses. Based on that evaluation, UCR proposes, as part of the proposed 2005 LRDP Amendment 2, that the site of Parking Structure No. 2 be relocated from frontage on MLK to a location adjacent to and west of the freeway south of Everton Place to provide the western terminus of a future pedestrian bridge over the freeway from a future parking structure on Parking Lot No. 1 on the east side. The relocation of this parking structure would occur on a site designated for *Campus Support* and would require the reconfiguration of the support site further south and to the west.

Parking Structure No. 4 is located at the northeast corner of MLK and Canyon Crest Drive. The location of this parking structure will not change under the proposed 2005 LRDP Amendment 2.

Former Parking Structure No. 3 would be deleted from the LRDP Land Use Map under the proposed 2005 LRDP Amendment 2 to make room for the medical school and its parking spaces would be reallocated to other three parking structures on the West Campus. As a result, each of the three remaining parking structures would increase in size to accommodate the spaces that were previously designated for Parking Structure No. 3.

3.4.1.3 West Campus Open Space Modification

Reconfiguration of Grove Concept to Gage Canal Mall Concept

The 2005 LRDP included a "Grove" concept for the major open space component of the West Campus *Academic* area. As described in the 2005 LRDP, the Grove concept featured a 15-acre rectangular grove centered on the Gage Canal north of MLK and included a specific *Special Academic Building Area* land use designation within the Grove for uses of campus-wide importance or high activity. The 2005 LRDP

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6 The University would like to acquire the Caltrans property in the future to create a northern pedestrian and bicycle entry statement and connection to the West Campus from University Avenue at the northern terminus of the Gage Canal Mall as well as to locate a future parking structure. Therefore, although the proposed site of this parking structure is not currently owned by the University, a land use designation has been tentatively assigned by the Campus to this area in anticipation of the future acquisition of this Caltrans property.

contemplated that these uses would be designed specifically to be compatible with the historic and agricultural heritage of the Grove, the University and the region.

UCR revisited this concept through the CAMPS process and determined that a better and more sustainable *Open Space* concept for the West Campus would be a linear north-south open space area. This new proposed Gage Canal Mall concept uses as an opportunity the requirement from the Gage Canal Company that any development in the proximity of the canal and/or 50-foot-wide easement would require undergrounding of the canal in dual pipes while maintaining its gravity flow from north to south. The Gage Canal Company's requirement further allows installations above the undergrounded canal of hardscape and/or landscape but prohibits structures or trees. The Gage Canal Mall concept would total 11.6 acres and will create a new linear configuration of open space that maximizes the otherwise unusable land base as a circulation element for pedestrians and bicycles and provides opportunities for sustainable planting scenarios in the form of a linear botanical garden, arboretum walk, or sustainable landscape demonstration garden.

The Gage Canal Mall would serve a number of roles, providing a range of gathering spaces, a curving pedestrian and bicycle spine and an organic counterpoint to the formal grid of buildings, streets, malls, and quads on the West Campus. The Gage Canal Mall would extend roughly from University Avenue on the north to MLK on the south as a sinuous band of open space with a primary 20 to 25 foot wide pedestrian and bicycle spine following the easement that would provide a bicycle link between the campus and adjacent areas as outlined in the City of Riverside Bicycle Master Plan. Secondary, curving and overlapping 10-foot-wide pedestrian paths on either side of the primary path would reinforce the "braided" series of pathways evocative of an "arroyo or dry wash" similar to the dry creek beds found in Riverside County. It would be approximately 2,900 feet in length and range from approximately 125 feet to 250 feet in width.

Climate adaptable and low water requiring plants would be part of the plant palette with informal plantings and groups of trees. Opportunities for a botanical walk and arboretum walk, such as found at UC Davis, would contribute to the educational and teaching potential of this open space. The Gage Canal Mall would not have water flowing in it; instead, stones, boulders, and rock outcroppings typical of a dry riverbed would be encouraged. Pedestrian bridges over the mall could connect the east and west side of the mall as well as provide view opportunities down the central spine.

The previous open space plan featuring the Grove concept is shown in **Figure 3.0-7, 2005 LRDP Open Space Framework**. The new open space plan featuring the Gage Canal Mall concept is shown in **Figure 3.0-8, Proposed 2005 LRDP Amendment 2 Open Space Framework**. In addition, the proposed 2005 LRDP Amendment 2 would replace the *Special Academic Building Area* and *Open Space* land use

designations under the Grove concept with the *Open Space* and *Academic* designations under the Gage Canal Mall concept.

The Gage Canal Mall would also be intersected by the proposed West Campus Mall and a series of traditional quads or courtyards. Building envelopes would be arranged to frame these malls, quads, and courtyards.

West Campus Mall

The proposed 2005 LRDP Amendment 2 would add the West Campus Mall to the eastern portion of the West Campus academic core. The Mall is intended to provide an open space for the West Campus academic core and contribute to the *Open Space* system on the West Campus. The approximately 3.8-acre Mall would be framed by academic buildings and could host a wide variety of informal uses. The Mall would be 170 feet in width with a 10-foot pedestrian walk and a 25-foot transitional zone located on each side of the 100-foot-wide central green. **Figure 3.0-8** presents the location of this new open space feature.

3.4.1.4 Landscape Buffer Extension

The proposed 2005 LRDP Amendment 2 would extend the 100-foot-wide landscape buffer along the north side of MLK between Cranford Avenue and Chicago Avenue to buffer areas designated as *Family, Apartment Housing with Related Support (including Child Care)* located to the west of Iowa Avenue from activity along MLK. **Figure 3.0-8** presents this proposed extension of the landscape buffer.

3.4.1.5 Extension of Northwest and Southwest Malls

The proposed 2005 LRDP Amendment 2 would extend the Northwest and Southwest Malls from Cranford Avenue to Chicago Avenue to connect areas designated as *Family, Apartment Housing with Related Support (including Child Care)* located to the west of Iowa Avenue to the rest of the West Campus. **Figure 3.0-8** presents this proposed extension of the malls.

3.4.1.6 Other Land Use Designation Changes

The designation of the *SOM* site, the redistribution of *Parking*, and an improved *Open Space* concept described above would trigger the need to re-designate several parcels on the West Campus so that adequate land acreage required for other uses and programs such as student housing and athletics/recreation are maintained. Therefore, the 37.3-acre parcel in the northwest corner of MLK and Chicago Avenue on the West Campus designated *Campus Reserve* would be re-designated *Family, Apartment Housing with Related Support (including Child Care)* with some areas designated *Open Space* associated with the extension of the Northwest and Southwest Malls as well as the landscape buffer along

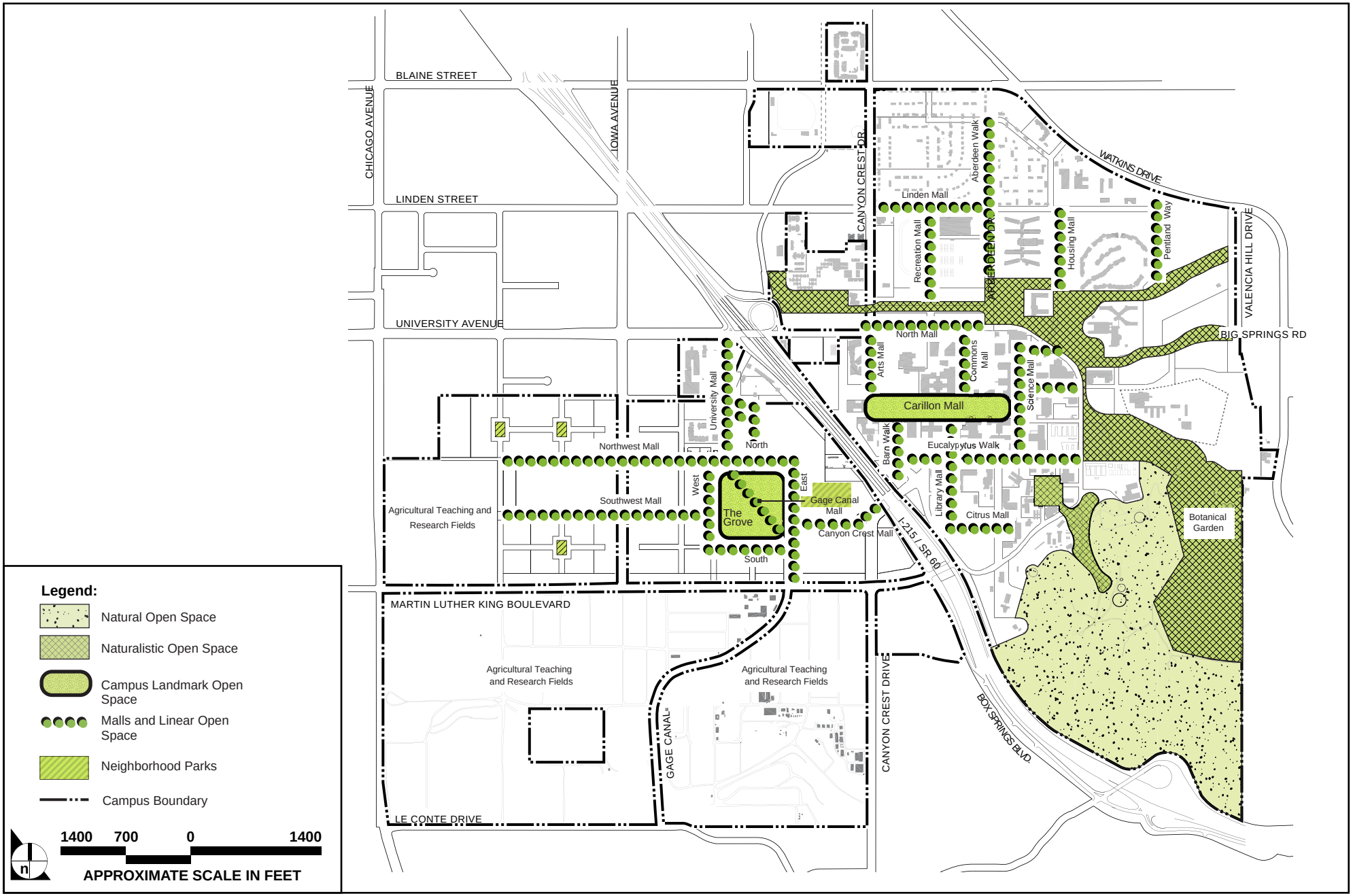
MLK. The *Campus Support* designation (4.6 acres) in the northwest corner of the West Campus would be changed to *Family, Apartment Housing with Related Support (including Child Care)*, and a small area (1.5 acres) designated *Family, Apartment Housing with Related Support (including Child Care)* to the east of Cranford Avenue between the Northwest and Southwest Malls would be changed to *Athletics and Recreation*. Finally, the area located adjacent to the I-215/SR-60 freeway that is designated *Campus Support* on the existing Land Use Map as well as the 5.21-acre parcel at the northeast corner of MLK and Canyon Crest Drive would be consolidated and placed south of Parking Structure No. 2.

3.4.1.7 Previously Approved Amendments and Land Use Map Changes

Minor land use changes have occurred on the campus since the approval of the 2005 LRDP. These changes include a 3.25-acre deed restriction in the Agricultural Operations fields south of MLK (2005 LRDP Amendment 1) and an "lot line adjustment" to expand the *Campus Support* land use designation with a similar decrease in *Parking* at the northeast corner of Canyon Crest Drive and MLK to accommodate an Environmental Health & Safety facility. This change in the acreages, although approved with respect to an earlier project approval, will be deleted and the entire parcel reverted to *Parking* to provide for a parking structure to serve the west end of the East Campus academic core and the east end of the West Campus academic core. To date these changes have not been placed on the 2005 LRDP Land Use Map. In conjunction with the proposed 2005 LRDP Amendment 2, the Campus will update the 2005 LRDP Land Use Map to reflect the previously approved map changes with consideration for the revision of the support/parking change. **Figure 3.0-6** incorporates these changes.

In addition, in 2009 the University purchased the Highlander Ridge (now known as Falkirk) apartment complex at the northwest corner of Linden Street and Canyon Crest Drive and the Summer Ridge (now known as Oban) apartment complex located at the southwest corner of Linden and Canyon Crest, south of Falkirk, and a small parcel adjacent to Falkirk on the north. As these now University-owned parcels have not been assigned a LRDP land use designation, the proposed 2005 LRDP Amendment 2 would designate these parcels as *Family, Apartment Housing with Related Support (including Child Care)* and show their location on the 2005 LRDP Land Use Map. **Figure 3.0-6** shows these new housing designations.

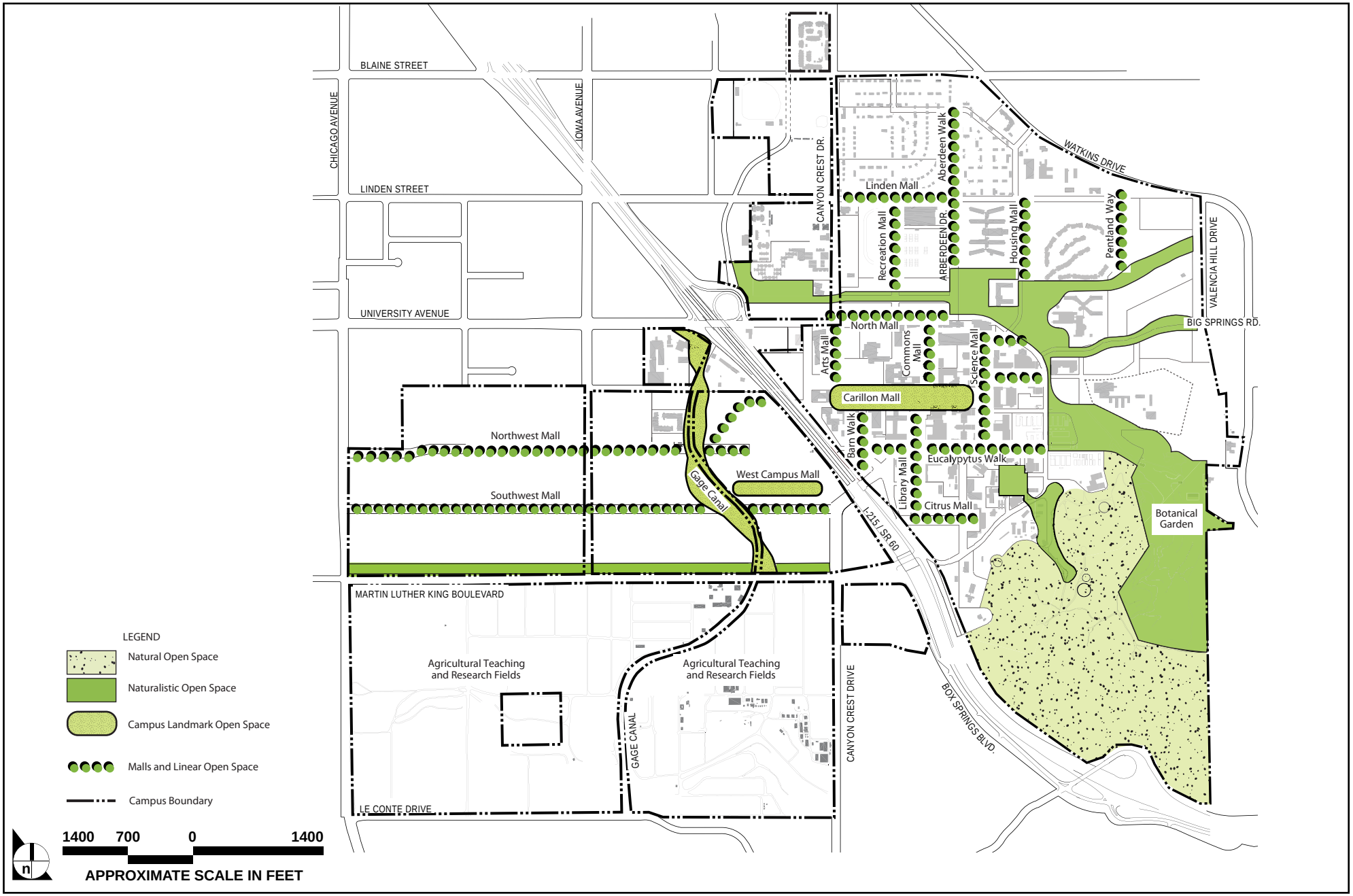
Finally, as a separate and independent project, the Campus proposed the Glen Mor 2 project, a new 800-bed student housing apartment complex. This project included a proposal to amend the 2005 LRDP to re-designate a 4.8-acre area on the East Campus west of Valencia Hill Drive and north of Big Springs Road from *Athletics and Recreation* to *Family, Apartment Housing with Related Support (including Child Care)*. The impacts of the proposed Glen Mor 2 project were analyzed in a separate that was circulated for public review and comment in Spring of 2011. The Glen Mor 2 project EIR was certified and the project was approved by The Regents in May 2011. The proposed 2005 LRDP Amendment 2 includes the changed land use designation for the Glen Mor 2 site described above in the LRDP Land Use Map. **Figure 3.0-6** shows the revised designation.



SOURCE: UCR 2005 LRDP – November 2005

FIGURE **3.0-7**

2005 LRDP Open Space Framework



SOURCE: UCR 2005 LRDP Amendment 2 – 2011

FIGURE **3.0-8**

Proposed 2005 LRDP Amendment 2 Open Space Framework

3.4.2 Proposed Text Changes

3.4.2.1 Extension of the 2005 LRDP Horizon Year

The 2005 LRDP projected a total enrollment of 25,000 students by the 2015/16 academic year. Based on a current enrollment of 20,746 (2010/11 academic year), the Campus does not expect to reach the 25,000 student enrollment level until the 2020/21 academic year. Therefore, in order to be consistent with campus growth patterns, the proposed 2005 LRDP Amendment 2 would extend the horizon of the 2005 LRDP from 2015/16 to 2020/21.

3.4.2.2 Increase Campus Development Capacity

The 2005 LRDP did not envision the development of a medical school at UCR. Therefore, the total building space under the 2005 LRDP that was evaluated in the 2005 LRDP EIR did not include an adequate amount of building space that would allow UCR to develop the medical school. As shown in **Table 3.0-1**, the medical school would involve about 3.1 million gsf of building space. In order to provide for the development of the medical school, the proposed 2005 LRDP Amendment 2 would allow for the construction of a total of 10.2 million gsf of new building space (7.1 million gsf approved under the 2005 LRDP plus 3.1 million gsf for the medical school) for a total of 14.9 million gsf for 25,000 students.

The 2005 LRDP set a goal to achieve academic core density of 1.0 FAR or higher on West Campus with a three- to four-story height maximum. In order to meet future enrollment growth and academic goals, and provide for the additional space required by a medical school, the development density of the West Campus will be increased and greater building heights will result in new relationships with key open spaces. Increased FARs that range from 1.6 (*Academic*) to 1.9 (*SOM*) are planned for the West Campus in order to accommodate the academic programs and provide an adequate land base for the medical school; these would result in five-story and six-story buildings with eight-story signature buildings for the West Campus *Academic* land use and five-story to eight-story buildings with a potential 12-story signature building for the West Campus *SOM* land use. The two parking structures serving the medical school would be seven and eight levels, respectively.

3.4.2.3 School of Medicine Design Criteria

The proposed 2005 LRDP Amendment 2 would include design criteria contained in a set of SOM Design Guidelines prepared by UCR. The Design Guidelines include Program Adjacencies, Site Capacity and Density, Planning and Design Strategies; Architectural Guidelines; Landscape Guidelines and Sustainability. Architectural guidelines include Building Height, Precinct Core, Precinct Perimeter, and

Phasing Strategies. The guidelines describe the design intent, but allow for flexibility to meet the future needs of the school of medicine that will be developed over time.

3.4.2.4 Circulation and Parking Chapter Update

The proposed 2005 LRDP Amendment 2 would update the Circulation and Parking Chapter to reflect changes to the existing and future transit service and proposed Transportation Demand Management program. Specifically, the proposed amendment to the 2005 LRDP would add a description of the existing and future transit service.

3.4.2.5 Resource Conservation and Environmental Stewardship Chapter Update

The proposed 2005 LRDP Amendment 2 would update the existing Resource Conservation and Environmental Stewardship Chapter to include descriptions of UCR's Sustainability and Climate Action Plans (see **subsection 3.7** below). Implementation of these plans was not a requirement of the 2005 LRDP.

3.4.2.6 Permitted Uses within Parking Structures

In an effort to use land and space more efficiently on campus, the proposed 2005 LRDP Amendment 2 would modify the description of parking facilities in the 2005 LRDP to allow retail and/or office uses within parking structures on campus if desired.

3.5 LONG-RANGE DEVELOPMENT PLAN ASSUMPTIONS

The following describes how the proposed 2005 LRDP Amendment 2 would affect key aspects of the 2005 LRDP which include: (1) land use; (2) student enrollment and the campus population; (3) campus development capacity; (4) student housing; (5) transportation and circulation; and (6) utility infrastructure.

3.5.1 Land Use

The proposed 2005 LRDP Amendment 2 would change land use designations of several parcels on the West Campus as described above. As a result of these proposed changes, the total acreages included in the LRDP for the various campus uses will shift compared to the acreages in the 2005 LRDP. **Table 3.0-3, Land Use Summary – 2005 LRDP and 2005 LRDP Amendment 2**, provides a summary of acreage assigned to major land uses under the approved 2005 LRDP and the acreages by major land uses that would result if the proposed Amendment 2 to the 2005 LRDP is approved.

Table 3.0-3
Land Use Summary – 2005 LRDP and 2005 LRDP Amendment 2

Land Use Category	West Campus – 2005 LRDP (acres)	West Campus – 2005 LRDP Amendment 2 (acres)	East Campus – 2005 LRDP (acres)	East Campus – 2005 LRDP Amendment 2 (acres)	Total 2005 LRDP (acres)	Total LRDP Amendment 2 Area (acres)
Academic	46.2	41.4	132.2	132.2	178.4	173.6
Special Academic Building Area	8.1	--	--	--	8.1	--
Family, Apartment Housing & Related Support	68.5	77.4	39.6	58.5	108.1	135.9
Residence Hall and Related Support	--	--	60.5	60.5	60.5	60.5
Athletics and Recreation	14.1	15.6	53.4	48.7	67.5	64.3
Open Space	25.2	47.0	144.2	144.2	169.4	191.2
Open Space Reserve	--	--	130.5	130.5	130.5	130.5
Campus Reserve	37.3	--	--	--	37.3	--
Agricultural, Teaching, and Research Fields	294.9	296.0	--	--	294.9	296.0
Non-institutional Agencies	--	--	12.3	12.3	12.3	12.3
Support	9.1	2.9	11.0	11.0	20.1	13.9
Parking (in structures only)	7.9	10.9	17.1	16.6	25.0	27.5
School of Medicine	N/A	38.7	N/A	N/A	--	38.7
Total	**511.3**	**529.9**	**600.8**	**614.5**	**1,112.1**	**1,144.4** [1]

Source: UCR 2005 LRDP; UCR 2005 LRDP Amendment 2

[1] *The 2005 LRDP Amendment 2 acreages differ from the 2005 LRDP. For 2005 LRDP Amendment 2, land use areas were calculated using more accurate 2007 GIS data that was not available at the time of the 2005 LRDP. All base maps were derived from a 2006 campus aerial (updated 2008) from UCR using EPOCH 2004 datum. West Campus Acreage calculations are based upon UCR property lines, not public right-of-way.*

3.5.2 Student Enrollment and Campus Population

The 2005 LRDP projected that student enrollment would increase from 12,703 students (2000/01 academic year) to a headcount of approximately 25,000 students by the 2015/16 academic year. This student enrollment translated into an anticipated total campus population of approximately 35,540—an estimate that includes students, academic employees, staff employees, and other individuals. The 2001/01 academic year, 2010/11 academic year (existing) and projected campus population are presented in **Table 3.0-4, Campus Population – 2005 LRDP and 2005 LRDP Amendment 2**. Current campus enrollment is 20,746 students (2010/11 academic year), which is about half way between the 2000/01 academic year listed in the 2005 LRDP and projected total.

Based on latest State demographic projections and as a result of State budget constraints, UCR has revised its enrollment projections and anticipates that the student enrollment level will remain at about 20,750 students until the 2016/17 academic year and the enrollment level of 25,000 students is now projected to be attained by the 2020/21 academic year.

The projected enrollment level of 25,000 students includes the 400 students that are currently anticipated for the medical school. All other persons associated with the medical school were not included in the total campus population of 35,540 persons reported in the 2005 LRDP. As a result of the medical school, UCR's total daily population would increase from the previous projection of 35,540 persons to 41,393 persons by 2020–21; an increase of 5,853 persons (excludes the 400 students already accounted for in the 25,000 anticipated enrollment).

Table 3.0-4
Campus Population – 2005 LRDP and 2005 LRDP Amendment 2

	2000/01 Academic Year	2010/11 Academic Year (Existing)	2005 LRDP 2015/16 Projections	Revised 2020/21 Projections + SOM
Students [a]	12,703	20,746	25,000	25,000
Faculty and Academic Staff [b]	865	927	1,726	2,714
Nonacademic Staff [c]	2,877	4,457	6,190	9,853
Other Individuals [d]	1,196	1,836	2,624	3,826
Total	**17,641**	**27,966**	**35,540**	**41,393**

Source: UCR 2005 LRDP, UCR Capital and Planning, May 2003; UCR 2005 LRDP Amendment 2

a Three-quarter average headcount, including students studying abroad and medical students.

b Includes faculty, doctors, and other teaching and academic staff; excludes student employees (included in the enrolled student category)

c Includes post-doctoral scholars, principal investigators, medical offices, and ambulatory care facilities.

d Average weekday number of other individuals, including campus visitors, patients, childcare students, student family members (living on campus), daytime extension students, ASUCR, KUCR & Highlander nonstudent staff, vendors, and construction workers. Does not include evening or weekend extension students or evening or weekend visitors.

3.5.3 Campus Development Capacity

The 2005 LRDP estimated that a total of approximately 11.8 million gsf of academic buildings, support facilities, and student housing would be required to support a total future enrollment level of 25,000 students. As indicated in **Table 3.0-5, Projected Building Space under the 2005 LRDP and 2005 LRDP Amendment 2 (Gross Square Feet)**, with a development total of approximately 4.7 million gsf in Fall 2001, the 2005 LRDP estimated that the amount of building space would need to increase by approximately 7.1 million gsf to meet future enrollment needs. The amount of building space currently (Fall 2010) developed on campus is 6.5 million gsf.

The 2005 LRDP allocated approximately 596,635 gsf for new professional schools, but did not include a medical school. As stated in **subsection 3.4.1.1**, the medical school space needs are estimated at 3.1 million gsf. Therefore as part of the proposed 2005 LRDP Amendment 2, the new building space to be developed on the campus under the proposed amendment to the 2005 LRDP will increase by 3.1 million gsf for a total on-campus building space of 14.9 million gsf.

Table 3.0-5
Projected Building Space under the 2005 LRDP and 2005 LRDP Amendment 2
(Gross Square Feet)

Category	2001 Development Total (Fall 2001)	2005 LRDP Increase (from 2001 gsf)	Total Projected Under 2005 LRDP	Total Projected 2005 LRDP Amendment 2	Net LRDP Amendment 2 Increase
Academic Programs	2,190,947	3,309,053	5,500,000	5,500,000	0
Graduate & Professional Schools	103,365	596,635	700,000	700,000	0
Administration	163,018	336,982	500,000	500,000	0
Public Service	206,512	193,488	400,000	400,000	0
Non-institutional Agencies	102,181	0	102,181	102,181	0
Student Services	187,444	312,556	500,000	500,000	0
Maintenance & Physical Plant	132,263	67,737	200,000	200,000	0
Recreation & Athletics	98,269	371,731	470,000	470,000	0
Housing	1,513,017	1,917,509	3,430,526	3,430,526	0
SOM	0	0	0	3,061,165	3,061,165
Total	**4,697,016**	**7,105,691**	**11,802,707**	**14,863,872**	**3,061,165**

Source: UCR 2005 LRDP, UCR Capital and Planning, May 2003; UCR 2005 LRDP Amendment 2

a Includes the MS&E Building to be completed in December 2010.

b Includes the Bio Medical Sciences program outlined in the 2001 LRDP which will join the SOM in the future.

c Includes the space currently assigned to the SOM Dean's office and the SOM Research Building (formerly Health Sciences Surge Building) opened in 2011.

3.5.4 Transportation and Circulation

Primary access to the campus is provided via the I-215/SR-60 freeway and the major streets surrounding the campus, including University Avenue, Blaine Street, Watkins Drive, MLK, Chicago Avenue, Iowa Avenue, and Canyon Crest Drive. Circulation within the campus is provided via East, South, West, and North Campus Drive which form a non-continuous loop around the campus, supplemented by portions of the streets identified above, and several smaller internal roadways, including Aberdeen Drive, Linden Drive, Pentland Way, Citrus Drive, Botanic Garden Drive, and Eucalyptus Drive. Access to the West Campus is provided by University Avenue, MLK, Iowa Avenue, and Chicago Avenue.

In addition, the 2005 LRDP proposed to improve pedestrian and bicycle circulation to extend the current network of pedestrian pathways, provide access to buildings and facilities on the West Campus, and improve access for bicyclists. On-campus shuttle service would connect major parking lots and campus destinations and link the East and West Campuses. This system would be coordinated with RTA routes and schedules. Concurrent with the development of the 2005 LRDP, UCR embarked upon the development of a multi-modal transportation program to reduce use of single occupant vehicles and encourage use of alternative transportation modes as articulated in the 2004 UCR Multi-Modal Transportation Management Strategy. Elements of the multi-modal transportation program include vanpools, carpools, RTA bus passes for students, staff and faculty, and expanded bike networks.

The proposed 2005 LRDP Amendment 2 would not make any major changes to the campus road network. The proposed Amendment 2 to the 2005 LRDP however would provide 3,781 parking spaces to serve the medical school, thus providing for an increase in the supply of on-campus parking from approximately 9,338 existing spaces to about 17,328 projected total spaces to accommodate campus population projected in the 2005 LRDP and proposed 2005 LRDP Amendment 2 by 2020/21. The proposed changes to the planned campus parking supply are summarized in **Table 3.0-6, Parking Supply – 2005 LRDP and 2005 LRDP Amendment 2**.

3.5.5 Utilities and Infrastructure

Utility infrastructure on the West Campus is currently limited to areas of existing development. New development on the West Campus, including new development associated with the proposed 2005 LRDP Amendment 2, will require extension of existing systems or installation of new infrastructure for potable and irrigation water, sewer, storm drain, natural gas, electricity and chilled and hot water. **Table 3.0-7, West Campus 2020 Utility Demand – 2005 LRDP and 2005 LRDP Amendment 2**, presents the projected West Campus utility demand as reported in the 2005 LRDP and as projected now under the proposed 2005 LRDP Amendment 2 with the addition of 3.1 million square feet of facilities. Major utility improvements needed to serve the medical school are described below.

Table 3.0-6
Parking Supply – 2005 LRDP and 2005 LRDP Amendment 2

Category	March 2001 [a]	Existing (Fall 2010)	Projected 2005 LRDP [b]	Projected 2005 LRDP Amendment 2[c]
Commuter Student	7,190 [f]	3,354	10,380 [f]	2,944
Faculty/Staff		3,605		4,815
School of Medicine [d]	--	--	--	3,781
Residential [e]				
Residence Halls	880	1,216	1,477	1,477
Campus-owned Apartments	494	909	2,940	2,940
Family Housing	268	254	1,071	1,071
Subtotal – Resident Parking	*1,642*	*2,379*	***5,488***	***5,488***
Total Parking	**8,832**	**9,338**	**15,868**	**17,328**

Source: UCR 2005 LRDP, UCR Capital and Planning, May 2003; UCR 2005 LRDP Amendment 2

a Existing data taken from UCR TAPS parking inventory, 2001

b Future parking developed as follows

- *Commuter and visitor parking: based on commuter population growth, as described in June 1, 2001 memo. 10 percent of total (9,800) is assumed to be visitor parking, based on the current parking breakdown*
- *Special permits/special needs: roughly proportional to campus population growth rate*

c The future commuter students and faculty and staff parking demand was estimated in consultation with TAPS, and was based on the University's current parking usage.

d Limited to SOM students, faculty, staff and visitors only

e Based on 50 percent of student body housed on campus, at the following rates:

- *Residential halls: 5,906 beds, one space per four beds (1:4)*
- *Campus-owned apartments: 5,880 beds, one space per two beds (1:2)*
- *Family housing: 714 student units, one and a half space per one unit (1:1.5 = 1071)*

f Includes commuter, visitor, special permits, disabled, special needs, and campus service vehicles/service/delivery categories listed in the 2005 LRDP.

Table 3.0-7
2020 Utility Demand – 2005 LRDP and 2005 LRDP Amendment 2

	Projected 2005 LRDP (11.8 million sq. ft) [a]	Projected 2005 LRDP Amendment 2 (+3.1 million sq. ft)	Projected 2005 LRDP + Amendment 2 (14.9 million sq. ft)
Water	4.2 MGD	1.1 MGD	5.3 MGD
Wastewater [b]	2.0 MGD	0.4 MGD	2.4 MGD
Natural Gas	36,000 Therms/day	9,458 Therms/day	45,458 Therms/day
Electricity	39 MVA	10.25 MVA	49.25 MVA
Chilled Water	18,562 Tons	4,876 Tons	23,438 Tons
Heating Hot Water	96,000 lb/hr	25,220 lb/hr	121,220 lb/hr

Sources: UCR 2005 LRDP
MGD = Million Gallons/Day; lb/hr = pounds/hour; MVA= Megavolt-Amperes
a Data obtained from 2005 LRDP
b Wastewater calculated assuming standard ration of 60% of the potable water is used for landscape uses while 40% is used for building uses, therefore, 40% of total potable water use is wastewater and goes into the sanitary sewer system.

Water

Land uses associated with the medical school would be served by an existing 16-inch water line located in Iowa Avenue, and future 8-, 10-, and 12-inch lines running throughout the medical school site. It is estimated that land uses that would be established on the West Campus under the proposed 2005 LRDP Amendment 2 would increase the West Campus demand for water by approximately 1.1 million gallons of water a day for a total of 5.3 million gallons of water per day campus-wide. This excludes the Agricultural Teaching and Research Fields which will continue to be served by the Gage Canal irrigation water.

Sanitary Sewer

Land uses associated with the medical school would be served by a future 8-inch sewer line in Iowa Avenue, and future 8-inch lines running throughout the medical school site. It is estimated that the campus land uses under the proposed 2005 LRDP Amendment 2 would increase the volume of wastewater generated on the West Campus by approximately 0.4 million gallons of wastewater per day for a total of 2.4 million gallons of wastewater per day campus wide.

Storm Drainage

Land uses associated with the medical school would be served by a proposed 30-inch storm drain in the Northwest Mall and drainage swales located in the landscape buffer along MLK and the Southwest Mall.

All storm water facilities will be designed in accordance with the Campus' Draft Stormwater Management Plan and Regional Water Quality Control Board requirements.

Natural Gas

Land uses associated with the medical school on the east side of the *SOM* site would be served by an existing 2-inch gas line in Iowa Avenue, and future 2-inch lines running throughout the *SOM* site. It is estimated that land uses in the SOM added to the West Campus under the proposed 2005 LRDP Amendment 2 would increase the West Campus demand for natural gas by approximately 9,458 Therms per day for a total of 45,458 Therms per day campus-wide.

Electrical

Land uses associated with the medical school would be primarily served by 5-inch power cables running throughout the *SOM* site, with some segments of the cables located in utility tunnels and/or direct burial that would serve the SOM. It is estimated that the land uses added to the West Campus under the proposed 2005 LRDP Amendment 2 would increase the West Campus demand for electricity by approximately 10 MVA with a total campus need of about 49 MVA per day. Studies of the electrical system on the West Campus have indicated that although the sub-station has the capacity to serve the West Campus, the loads required would eliminate redundancy in the system which would mean no backup is available if the system fails for some reason.

Chilled Water/Heating Hot Water

Land uses associated with the SOM would be primarily served by a 10-inch and 12-inch chilled water piping system and an 8-inch and 10-inch hot water piping system located in a utility tunnel and/or direct burial that would connect with the central plant serving the SOM. It is estimated that the land uses added to the West Campus under the proposed 2005 LRDP Amendment 2 would increase the West Campus demand for chilled water by 4,876 tons per day and for hot water by 25,220 pounds per hour for a campus wide demand of 23,438 tons per day and 121,220 pounds per hour, respectively.

3.6 THE SUSTAINABLE CAMPUS

3.6.1 Background

Since the LRDP adoption in 2005, substantial efforts in sustainability have been underway at the UCR campus and within the University of California system. Newly adopted policies reflect current legislation in the State of California as well as best practices initiated on the campus. In 2007, the UCR administration established the *Chancellor's Committee on Sustainability* to further environmental

stewardship and UCR became a signatory of the *American College and University Presidents Climate Commitment* (ACUPCC). In 2009, UCR initiated the UCR *Sustainability Action Plan* to develop the roadmap to achieving the Campus's sustainability goals.

3.6.2 UC Policy on Sustainable Practices

The UC Office of the President's Policy on Sustainable Practices and Guidelines (last updated September 1, 2009 – See http://www.universityofcalifornia.edu/sustainability/documents/policy_sustain_prac.pdf) has goals to strengthen implementation of best practices in efficient energy use and resource conservation; foster environmental awareness; reduce environmental consequences; and provide educational leadership. The guidelines recommend that University operations incorporate: the principles of energy efficiency and sustainability in projects, operations and maintenance within budgetary constraints and program requirements; minimize the use of non-renewable energy sources; incorporate alternative means of transportation and provide affordable on-campus housing; track, report and minimize greenhouse gas emissions; minimize waste sent to landfills; and utilize purchasing power to meet sustainability objectives.

In March 2007, the University of California signed the ACUPCC, pledging that all 10 UC campuses will maintain greenhouse gas (GHG) emission inventories and achieve climate neutrality as soon as possible. In conjunction with joining the ACUPCC, the University of California adopted system-wide interim climate protection targets to reduce greenhouse gas emissions to 2000 levels by 2014, and 1990 levels by 2020. In addition, as signatory to the ACUPCC, the UC system has a long-term goal of becoming carbon neutral by 2050.

3.6.3 UCR Sustainability Action Plan

UCR has prepared a draft UCR Sustainability Action Plan (SAP) to address the goals of campus sustainability and provide a detailed and actionable road map to sustainability, which builds on campus successes and develops new initiatives to further the objectives. Nine focus areas are addressed, which are intentionally complimentary and interconnected due to the interdisciplinary aspects of sustainability issues. Major components of each of these areas are listed below.

1. **Built Environment** – Develop exemplary facilities within which to learn, live, and work which provide healthy environments that integrate the highest possible sustainable design, construction, operations, and maintenance standards.

2. **Energy & Climate Protection** - Strive to achieve campus-wide climate neutrality through energy conservation and efficiency, on-site generation when and where appropriate, procurement of clean and renewable energy while ensuring supporting policies and resources.

3. **Water** - Reduce imported water demands through indoor water reduction, conservation and re-use measures and outdoor conversions to low water requiring landscapes or weather-based irrigation systems where appropriate.

4. **Sites** - Enhance natural resource and watershed functioning through protection of open space, design and maintain landscapes to enhance ecological function; implement Low Impact Development practices; and, design infrastructure to promote a sustainable campus environment.

5. **Transportation** - Implement transportation strategies to reduce fuel consumption, air pollution and carbon dioxide and other toxic emissions while furthering alternative transportation programs and infrastructure.

6. **Recycling & Waste Management** - Achieve a net zero waste campus through front-end consumption reduction programs and back-end waste stream diversion practices to close loops on all campus inputs and outputs.

7. **Procurement** - Achieve cradle-to-cradle certification or similar for all product purchases to ensure source location, raw materials, manufacturing process, packaging, and disposal life-cycle phases promote sustainability.

8. **Food** - Increase consumption of locally grown and organic foods while applying sustainable practices to food procurement, preparation, service and disposal and related systems, equipment and facilities.

9. **Academics & Research** - Promote integration and awareness of the triple-bottom line (environmental stewardship, social justice, and economic prosperity) impacts into educational and research activities.

The Sustainability Action Plan is intended to be a living document and a roadmap for achieving the Campus sustainability goals and will be updated when appropriate to report progress and achievements.

3.6.4 UCR Climate Action Plan

To comply with the American College & University Presidents Climate Commitment (ACUPCC) requirements, UCR prepared and published a Climate Action Plan (CAP) and submitted the plan to the ACUPCC in December 2010. The UCR CAP is a strategic roadmap to establish emissions reduction targets and implement strategies to reach UCR's goal of reducing GHG emissions. To achieve this

commitment, the CAP presents the campus's baseline, existing, and projected GHG emissions, summarizes UCR's current emissions reduction strategies, and lists additional GHG emissions reduction strategies that UCR plans to implement in the future. The CAP also includes other relevant information such as how UCR plans to monitor its progress towards the reduction goal and potential funding for its GHG reduction strategies. (http://www.presidentsclimatecommitment.org/)

3.7 LRDP PLANNING STRATEGIES AND PROGRAMS AND PRACTICES

The 2005 LRDP included a number of Planning Strategies (PS) as guides for future development on the campus. These PSs were adopted by the University in conjunction with the approval of the 2005 LRDP. The 2005 LRDP EIR also identified a series of existing Programs and Practices (PP) that would reduce or avoid impacts from development on campus. The proposed Amendment 2 eliminates some PSs as they have been replaced by other environmental plans and programs on the campus. Also, minor changes to other PSs and PPs have been made. The PSs and PPs that have been eliminated or modified are listed below and the changes are indicated by strikeout/underline format. A complete list of PSs and PPs is provided in **Appendix 3.0**.

The PPs and PSs will be incorporated into projects implementing the amended 2005 LRDP on a case by case basis when needed to ensure that a project's impact is less than significant.

Planning Strategies

Land Use

1. Achieve academic core densities of 1.0 FAR or higher on the East ~~and West Campuses~~ Campus and 1.6 to 1.9 FAR on the West Campus in order to achieve a balance of academic land area versus other required uses.

Open Space

6. Provide a new Campus Landmark Open Space on the West Campus, the ~~Grove~~ Gage Canal Mall, to reflect the natural dry arroyos that are part of the Riverside landscape, and provide ~~a~~ gathering/activity spaces within and adjacent to the Mall.

~~*Conservation*~~

~~1. Protect natural resources, including native habitat; remnant arroyos; and mature trees, identified as in good health as determined by a qualified arborist, to the extent feasible.~~

~~2. Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce storm water runoff, and maintain existing landscapes, including healthy mature trees whenever possible.~~

~~3. Continue with the increase in building densities on campus, particularly in academic zones, in order to preserve open space and conserve limited land resources and the agricultural fields.~~

~~4. Preserve historic buildings to the extent feasible.~~

~~5. Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations.~~

~~6. Comply with any future conservation goals or programs enacted by the University of California.~~

Development Strategies

2. Review and update, as needed, the Campus Design Guidelines and the Campus Landscape Guidelines (now the 2007 Campus Design Guidelines) to ensure conformity with LRDP planning strategies.

Programs and Practices

PP 4.1-1 The Campus shall provide design ~~architects~~ professionals with the 2007 Campus Design Guidelines and instructions to implement the guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design.

PP 4.1-2(a) The Campus shall continue to provide design ~~architects~~ professionals with the 2007 Campus ~~Landscape Master Plan~~ Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the ~~Master Plan~~ Guidelines with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible.

PP 4.9-1(a) The Campus shall provide design ~~architects~~ professionals with the 2007 Campus Design Guidelines and instructions to implement the guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design.

PP 4.9-1(b) The Campus shall continue to provide design ~~architects~~ professionals with the 2007 Campus ~~Landscape Master Plan~~ Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the ~~Master Plan~~ Guidelines with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible.

PP 4.9-1(d) UCR strongly commits to working closely with the City of Riverside to address and resolve land use compatibility impacts arising from increased enrollment on the residential neighborhoods surrounding UCR, particularly related to the impacts of student housing and associated ~~attendant~~ parking, noise, and traffic ~~and other issues~~.

~~PP 4.10-1(a)~~ ~~The campus shall continue to shield all new stationary sources of noise that would be located in close proximity of noise sensitive buildings and uses or locate the new equipment in less sensitive areas of the campus to ensure that exterior noise levels generated by these sources and measured at nearby sensitive uses do not exceed 50 dBA Leq during the day and 40 dBA Leq during the night at residential uses (including on campus housing), and 60 dBA during the day and 55 dBA during the night at classrooms and office buildings.~~

PP 4.10-1~~(b)~~(a) UCR will incorporate the following siting design measures to reduce long-term noise impacts:

(i) Truck access, parking area design, and air conditioning/refrigeration units will be designed and evaluated when planning specific individual new facilities to minimize the potential for noise impacts to adjacent developments.

(ii) Building setbacks, building design and orientation will be used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes, such as Blaine Street, Canyon Crest Drive, University Avenue, and Martin Luther King Jr. Boulevard. Noise walls may be advisable to screen existing and proposed facilities located near the I-215/SR-60 freeway.

(iii) Adequate acoustic insulation would be added to residence halls to ensure that the interior Ldn would not exceed 45 dBA during the daytime and 40 dBA during the nighttime (10 P.M. to 7 A.M.) in rooms facing major streets.

(iv) Potential noise impacts would be evaluated as part of the design review for all projects. If determined to be significant, mitigation measures would be identified and alternatives suggested. At a minimum, campus residence halls and student housing design would comply with Title 24, Part 2 of the California Administrative Code.

PP 4.14-4 The Campus shall provide design ~~architects~~ professionals for roadway and parking improvements with the Campus Design Guidelines and instructions to implement those elements of the guidelines relevant to parking and roadway design.

PP 4.14-8 To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, the Office of Architects and Engineers ~~Design and Construction~~ shall consult with the UCPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes.

4.0 ENVIRONMENTAL IMPACT ANALYSIS

4.0.1 INTRODUCTION

As stated in **Section 1.0, Introduction,** this Environmental Impact Report (EIR) is a program-level environmental assessment, which evaluates the effects of adoption and implementation of the proposed 2005 LRDP Amendment 2 and focuses on full development of the campus under the 2005 LRDP as amended by the proposed Amendment 2, at a programmatic rather than project-specific level. The 2005 LRDP is a guide to land development on the campus, and the heart of the LRDP is a land use map that designates areas on the campus for certain land uses, including *Academic, Housing, Campus Support*, etc. The proposed Amendment 2 would revise this map to designate an area on the West Campus for the development of a school of medicine. While the designation of this area for a medical school will allow the Campus to move forward with the planning for the medical school, additional environmental review would be necessary before any medical school facilities are built in the designated area. Adoption of the proposed 2005 LRDP Amendment 2 does not constitute a commitment to any specific project, construction schedule, or funding priority. Each project proposed by UCR during the time span of the 2005 LRDP as amended by the proposed Amendment 2 will be individually reviewed and approved by the University before it is implemented.

As described in **Section 1.0, Introduction**, based on preliminary environmental analysis and the input received during the EIR scoping process, this EIR addresses the following environmental factors in detail:

- 4.1 Aesthetics
- 4.2 Agricultural Resources
- 4.3 Air Quality
- 4.7 Hazards and Hazardous Materials
- 4.8 Hydrology and Water Quality
- 4.9 Land Use and Planning
- 4.10 Noise
- 4.11 Population and Housing
- 4.12 Public Services
- 4.14 Transportation and Traffic
- 4.15 Utilities and Service Systems
- 4.16 Greenhouse Gas Emissions

The preparation of this EIR was preceded by an Initial Study (included in **Appendix 1.0**), which determined that the proposed 2005 LRDP Amendment 2 would not result in any new impacts to **Sections 4.4, Biological Resources, 4.5, Cultural Resources, 4.6 Geology and Soils** and **4.13, Recreation,** that were not adequately analyzed in the 2005 LRDP EIR and therefore further evaluation of these environmental factors in this EIR was not needed. The Initial Study also determined that the proposed Amendment 2 would not result in certain identified impacts (checklist questions) under the environmental factors listed

above. The resource sections that follow clearly identify those impacts that were scoped out based on the analysis in the Initial Study or in the 2005 LRDP EIR and are therefore not evaluated further in this EIR.

4.0.2 LEVEL OF SIGNIFICANCE

Under the *California Environmental Quality Act* (CEQA), a variety of terms are used to describe the levels of significance of environmental impacts. The definition of terms used in this EIR is presented below.

- **Significant and Unavoidable Impact.** An impact that exceeds the defined standards of significance and cannot be avoided or reduced to a less than significant level through implementation of feasible mitigation measures.

- **Significant Impact.** An impact that exceeds the defined standards of significance and that can be avoided or reduced to a less than significant level through implementation of feasible mitigation measures.

- **Potentially Significant Impact.** A significant impact that may ultimately be determined to be less than significant; the level of significance may be reduced through implementation of policies or guidelines (that are not required by statue or ordinance), or through further definition of the project detail in the future. Potentially significant impacts may also be impacts for which there is not enough information to draw a firm conclusion; however, for the purpose of this EIR, they are considered significant. Such impacts are equivalent to Significant Impacts and require the identification of feasible mitigation measures.

- **Less Than Significant Impact.** Impacts that are adverse but that do not exceed the specified standards of significance.

- **No Impact.** The project would not create an impact.

4.0.3 FORMAT OF ENVIRONMENTAL SECTIONS

Each environmental factor considered in this section of the EIR is addressed under six primary subsections: Introduction, Environmental Setting, Regulatory Setting, Project Impacts and Mitigation Measures, Cumulative Impacts and Mitigation Measures, and References. An overview of the information included in these sections is provided below.

4.0.3.1 Introduction

The introduction section describes the factor to be analyzed and the contents of the analysis. It also provides the sources used to evaluate the potential impact of the project, and lists issues and concerns relative to the environmental factor identified by the public and the agencies during the EIR scoping process.

4.0.3.2 Environmental Setting

The environmental setting section for each environmental factor provides a description of the applicable physical setting of the project area and its surroundings (e.g., existing land uses, existing soil conditions, existing traffic conditions). The extent of the environmental setting area evaluated (the study area) differs among resources depending on the locations where impacts would be expected. For example, traffic impacts due to the proposed 2005 LRDP Amendment 2 are assessed for the regional roadway network, whereas aesthetic impacts from the implementation of the amended LRDP are assessed for immediate vicinity of the campus. The setting sections describe both local resources and regional resources that occur throughout the broader geographic area.

Section 15125 of the *State CEQA Guidelines* requires EIRs to include a description of the physical environmental conditions in the area of a project that exist at the time that the Notice of Preparation (NOP) is circulated. These environmental conditions normally constitute the baseline physical conditions relative to which the lead agency evaluates the change in conditions that would result from project implementation. The NOP for this Draft EIR was issued on November 8, 2010. Therefore, environmental conditions as of November 2010 represent the baseline for CEQA purposes. To evaluate most of the impacts of the proposed 2005 LRDP Amendment 2, the conditions in 2010 are considered to be the baseline. Full development of the campus under the 2005 LRDP as amended by the proposed Amendment 2 is then added to existing conditions in order to determine whether project implementation would substantially impact the resources, thereby resulting in a significant impact on the environment. However, because the proposed 2005 LRDP Amendment 2 is a long-term development plan for the UCR campus and the full development of the campus under the amended 2005 LRDP would not occur until 2020 or even later, for some environmental factors, two baselines (existing conditions and future No Project conditions) are used to evaluate the impact. For instance, the transportation effects of the amended 2005 LRDP are evaluated relative to both existing conditions and conditions that would exist in 2020 without the proposed project.

4.0.3.3 Regulatory Setting

The overview of regulatory considerations for each environmental factor is organized by agency, including applicable federal, State, regional, and local policies.

4.0.3.4 Project Impacts and Mitigation Measures

This subsection lists significance criteria that are used to evaluate impacts, followed by a discussion of the impacts that would result from implementation of the proposed project. Impacts are numbered and

shown in bold type, and the mitigation measures are numbered to correspond to the impact. Impacts and mitigation measures are numbered consecutively within each section.

Relevant LRDP Planning Strategies (PSs) and Programs and Practices (PPs) that were included in the approved 2005 LRDP are also discussed in each subsection. These are included in and are part of the 2005 LRDP. Therefore, the analysis presented in this EIR evaluates environmental impacts that would result from project implementation after the application of the 2005 LRDP PSs and PPs as amended by the proposed Amendment 2.

4.0.3.5 Cumulative Impacts and Mitigation Measures

In addition to the impacts of the 2005 LRDP Amendment 2, each environmental section also discusses cumulative impacts of campus development under the amended LRDP considered together with other development that may cause related impacts. The geographic area considered for each cumulative impact depends upon the impact that is being analyzed. For example, in assessing aesthetic impacts, only development within the vicinity of the campus would contribute to a cumulative visual effect. In assessing air quality impacts, on the other hand, all development within the air basin would contribute to regional emissions of criteria pollutants, and basin-wide projections of emissions are the best tool for determining the cumulative effect. For most resource areas, the cumulative study area is the City of Riverside.

The *State CEQA Guidelines* suggest that the analysis of cumulative impacts for each environmental factor can employ one of two methods to establish the effects of other past, current, and probable future projects. A lead agency may select a list of projects, including those outside the control of the agency, or, alternatively, a summary of projections. These projections may be from an adopted general plan or related planning document, or from a prior environmental document that has been adopted or certified, and these documents may describe or evaluate regional or area-wide conditions contributing to the cumulative impact. As the horizon year for the proposed 2005 LRDP Amendment 2 is 2020, this EIR evaluates cumulative impacts using projections of growth from the City of Riverside General Plan.

The cumulative impacts discussion describes the cumulative impacts of the proposed 2005 LRDP Amendment 2, and determines whether the proposed Amendment 2 to the 2005 LRDP in combination with other foreseeable development would result in a significant cumulative impact, and, if so, whether the proposed project's contribution to the significant cumulative impact would be cumulatively considerable.

Section 15130 of the *State CEQA Guidelines* provides direction regarding cumulative impact analysis as follows:

- An EIR should not discuss cumulative impacts that do not result in part from the proposed project;
- A lead agency may determine that an identified cumulative impact is less than significant, and shall briefly identify facts and analysis in the EIR supporting its determination;
- A lead agency may determine a project's incremental effect is not cumulatively considerable, and therefore is not significant, and shall briefly describe in the EIR the basis of its determination; and
- A lead agency may determine a project's cumulatively considerable contribution to a significant cumulative impact may be rendered less than cumulatively considerable and therefore residually not significant, if the project implements or funds its fair share of mitigation measure or measures designed to alleviate the cumulative impact.

4.0.3.6 References

This subsection lists the references used to prepare the environmental setting and impact analysis for each section of the EIR.

4.1 AESTHETICS

4.1.1 INTRODUCTION

This section describes the visual setting of the UCR campus and evaluates the potential for changes in visual character due to development under the proposed 2005 LRDP Amendment 2. Because the proposed Amendment 2 to the 2005 LRDP involves changes to the campus land use plan focused on the West Campus and does not propose any specific development projects, therefore, this section analyzes the general effects of future development on the West Campus, including the potential changes in the visual character of the area, the potential for scenic vistas to be blocked by future on-campus development, and the potential that sensitive receptors would be disturbed by light and glare generated or reflected by new on-campus structures. The analysis does not address the East Campus because no land use map changes are proposed for the East Campus that would have implications for visual impacts. Furthermore, the visual impacts of East Campus development are adequately addressed in the 2005 LRDP EIR.

Data used in the preparation of this section were taken from various sources, including site visits, previous environmental documentation prepared for the UCR campus including the 2005 LRDP EIR, and other campus data sources. Bibliographic entries for reference material are provided in **subsection 4.1.5, References,** of this section.

In response to the Notice of Preparation for this EIR, the City of Riverside noted that the Draft EIR needs to expand on the analysis in the NOP as it relates to aesthetics. No other public or agency comments related to aesthetics were received.

4.1.2 EXISTING CONDITIONS

4.1.2.1 Campus Setting

UCR is located in the City of Riverside, approximately 1.5 miles east of downtown, in western Riverside County. The approximately 1,144.4-acre UCR campus is located along the eastern edge of a broad valley formed by the Box Springs Mountains to the east and Mount Rubidoux to the west. The campus is generally bounded by University Avenue and Blaine Street on the north, Valencia Hill Drive and Watkins Drive on the east, the I-215/SR-60 freeway and Le Conte Drive on the south, and Chicago Avenue on the west (UCR 2005).

The campus is generally divided into two parts, which are separated by the I-215/SR-60 freeway. The East Campus is generally bounded by Canyon Crest Drive and the I-215/SR-60 freeway on the west, Blaine

Street and Watkins Drive on the north, Valencia Hill and Watkins Drive on the east, and the I-215/SR-60 freeway on the south. The West Campus is generally bounded by University Avenue on the north, the I-215/SR-60 freeway and Canyon Crest Drive on the east, Le Conte Drive on the south, and Chicago Avenue on the west (UCR 2005).

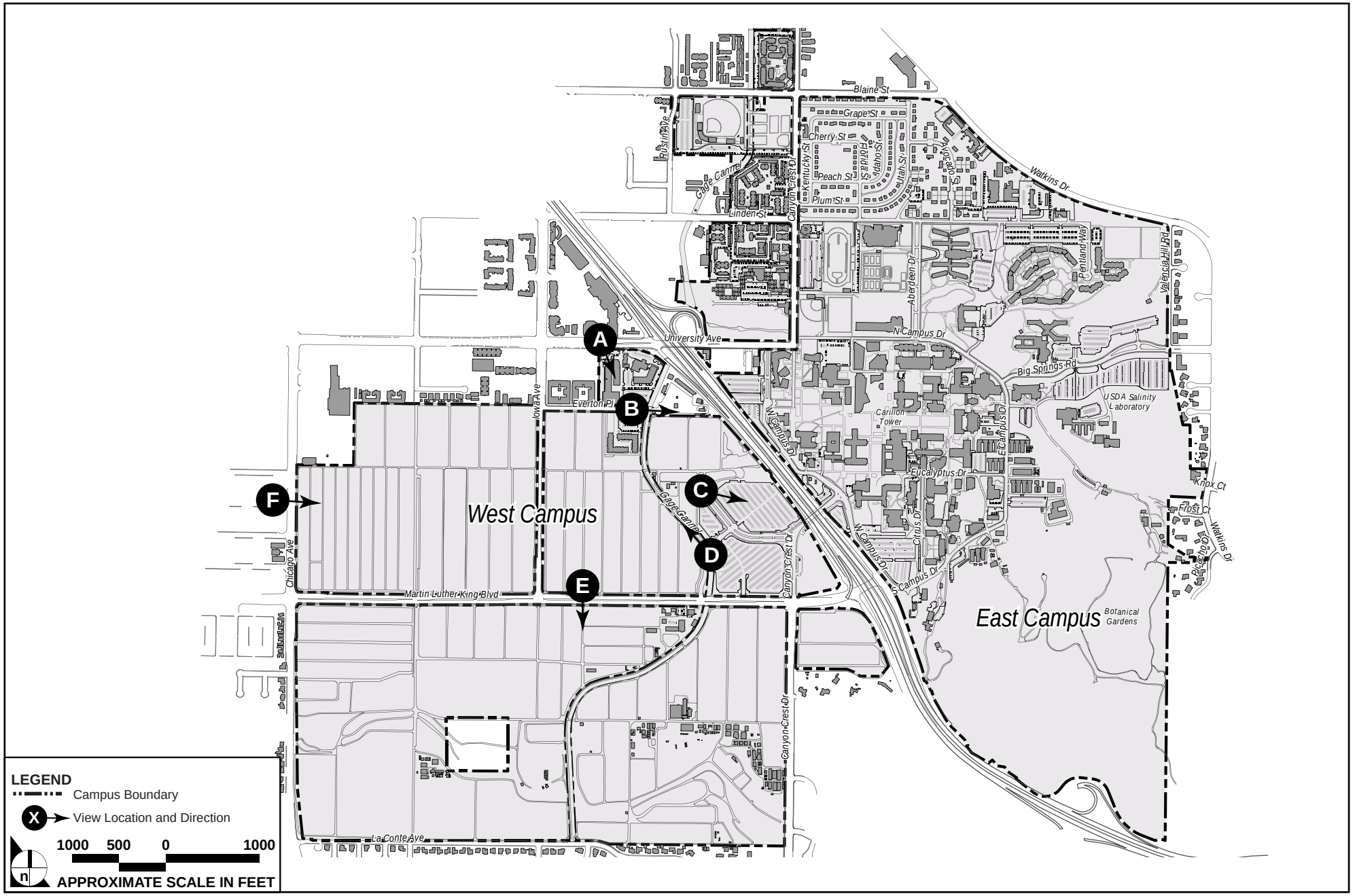
4.1.2.2 Visual Characteristics of the Surrounding Area

The general visual character of the area around the UCR campus is suburban in nature, with one-story single-family residential structures as the predominant feature, commercial uses along the major streets, two- and three-story multi-family residential structures near the campus, and some undeveloped land and agricultural uses interspersed between the predominant residential uses. Because of the largely residential nature of land uses surrounding the campus, the overall visual character is dominated by low-rise residential structures set back from the streets with landscaped front yards. Commercial uses along the major streets are generally fronted by surface parking lots with landscaping around the edges. The area southeast of the campus, nearest to the Box Springs Mountains is only sparsely developed, with scattered residential development interspersed with grasslands and coastal sage scrub (UCR 2005).

On clear days, the most prominent visual feature in the vicinity of the campus is the Box Springs Mountains, which are located to the northeast, east, and southeast of the campus. In the vicinity of the campus, the Box Springs Mountains range in height from approximately 1,944 feet (above mean sea level) to the north of the campus, approximately 2,200 to 2,800 feet east of the campus and up to 1,541 feet in the hills located in the southeastern portion of the campus. With a general on-campus elevation of between 1,000 and 1,100 feet (in the academic core and the area west of the I-215/SR-60 freeway), the Box Springs Mountains rise approximately 800 feet within 1 mile to the north of the campus and approximately 1,700 feet within 2 miles east of the campus. One segment of the Box Springs Mountains extends into the southeastern portion of the campus, with elevations that rise between 300 to 500 feet above the general campus elevation. Other visual features of note in the vicinity include Mt. Rubidoux to the west, the northern San Bernardino Mountains, and the San Gabriel Mountains approximately 35 miles to the northwest, with these ranges being visible from the campus only when atmospheric conditions permit (UCR 2005).

4.1.2.3 Visual Character of the West Campus

The following discussion summarizes the visual character of the West Campus, with particular emphasis on visual conditions along the campus edge. Eight photographs were taken of the campus; a key to the locations from which they were taken is shown in **Figure 4.1-1, Key to View Locations**, and the photographs are shown in **Figure 4.1-2** through **4.1-4**.



SOURCE: UCR – 2010, Impact Sciences, Inc. – January 2011

FIGURE **4.1-1**

Key to View Locations

1031-001•01/11

Photo A - UNEX (University Extension) looking south

Photo B - Caltrans Maintenance Yard looking east

NOT TO SCALE

SOURCE: EIR Associates – November 2005; Impact Sciences, Inc. – September 2009

FIGURE **4.1-2**

Photos A and B

Photo C - Parking Lot No. 30 looking southeast

Photo D - Gage Canal looking north

NOT TO SCALE

SOURCE: EIR Associates – November 2005; Impact Sciences, Inc. – September 2009

FIGURE **4.1-3**

Photos C and D

Photo E - West Campus looking south

Photo F - West Campus edge looking east

NOT TO SCALE

SOURCE: EIR Associates – November 2005; Impact Sciences, Inc. – September 2009

FIGURE **4.1-4**

Photos E and F

The West Campus (529.9 acres) is generally bounded by University Avenue on the north, the I-215/SR-60 freeway and Canyon Crest Drive on the east, Le Conte Drive on the south, and Chicago Avenue on the west, and is mostly undeveloped and occupied by agricultural research and teaching fields with row crops and orchards (primarily citrus). The six-story University Extension (UNEX) building and associated surface parking and parking structure occupy the northeastern corner of the West Campus on University Avenue (Photo A). To the east of UNEX is the Human Resources Building, followed by Highlander Hall, both of which are office buildings. South of UNEX, the International Village Student Housing complex is located on Everton Place. A Caltrans Maintenance Yard is also located at the end of Everton Place (Photo B) A large surface parking lot (Parking Lot No. 30) is located north of Martin Luther King Boulevard Jr. (MLK), west of Canyon Crest Drive (Photo C). The Gage Canal traverses the eastern portion of the West Campus flowing from north to south (Photo D). The remainder of the West Campus north of MLK is occupied by agricultural research and teaching fields. The area is flat and does not include unique landforms or native vegetation. The West Campus area south of MLK is also occupied by agricultural research and teaching fields and related support facilities (UCR 2005). The majority of the area is flat except for the Box Springs Arroyo which flows from Canyon Crest Drive on the east creating a 100-year flood plain west to Chicago Avenue. There are several small patches of coastal sage scrub in and along the flood plain.

With the exception of the above facilities, the edges of the West Campus are occupied by row crops, citrus and other tree orchards, and related agricultural support facilities. At some locations, low-growing row crops permit expansive views of the West Campus (Photo E) while at other locations views across the West Campus are generally screened by the presence of citrus orchards (Photo F) (UCR 2005).

4.1.2.4 Scenic Vistas

For the purposes of this EIR, scenic vistas may generally be described in two ways: panoramic views (visual access to a large geographic area, for which the field of view can be wide and extend into the distance) and focal views (visual access to a particular object, scene, setting, or feature of interest). Panoramic views are typically associated with vantage points that provide a sweeping geographic orientation and may include urban skylines, valleys, or mountain ranges. In addition, these views are typically available from a publicly accessible viewpoint, such as roads or public gathering places, rather than views available from private residences (UCR 2005).

In the vicinity of the UCR campus, the Box Springs Mountains are the most prominent visual feature from many locations, and thus sweeping panoramic views of the Box Springs Mountains are considered a scenic vista for the purposes of this EIR. Although panoramic views of the Box Springs Mountains are available in the vicinity of the campus, no specific objects, scenes, settings, or features of interest are

visible within that portion of the Box Springs Mountains adjacent to the campus. Thus, no specific focal views of the Box Springs Mountains have been identified. Thus, for the purposes of this EIR, scenic vistas are limited to panoramic views of the Box Springs Mountains from publicly accessible viewpoints (UCR 2005).

On-Campus Views (of Off-Campus areas)

As noted above, the most prominent visual feature in the vicinity of the campus is the Box Springs Mountains, which are located to the northeast, east, and southeast of the campus. On clear days, views of these mountains, and more distant mountains, including Mount Rubidoux and the San Bernardino Mountains, are available from various locations on the campus. Views of the adjacent mountains are generally available from locations on the West Campus; however, with the exception of Parking Lot No. 30, few of these locations are accessible to the public, as the agricultural teaching and research fields are fenced to preclude public access. Since Parking Lot No. 30 is not a public gathering place and thus not considered a key vantage point, views of the Box Springs Mountains from that location are not considered a scenic vista for the purposes of this EIR (UCR 2005).

Off-Campus Views (of the Campus and Off-Campus areas)

Views from the area immediately surrounding the campus vary, depending upon the location, the topography, and the adjacent on-campus land uses. The views around the West Campus are generally not limited by on-campus land uses or structures. Along Everton Place (the northern edge of the West Campus, east of Iowa), views of the Box Springs Mountains and the buildings in the academic core are generally available. Along Chicago Avenue (at the western edge of the West Campus), views include the on-campus agricultural research fields, taller buildings on the East Campus, and the Box Springs Mountains to the east and north. Along Iowa Avenue (which generally bisects the West Campus), views of the Box Springs Mountains are generally available. Along Le Conte Avenue (the southern edge of the West Campus), views across the campus are blocked in some locations by citrus groves, while other locations (adjacent to row crops) have views of the campus and mountains beyond. Views of the Box Springs Mountains are generally available along Canyon Crest Drive (south of the freeway) and Sycamore Canyon Boulevard. At some locations, views of the campus from these areas are generally screened by topography and landscaping (UCR 2005).

4.1.2.5 Light and Glare

In general, the primary source of light and glare on the West Campus is Parking Lot No. 30 located at Canyon Crest Drive and MLK. Light and glare from the lot is associated with light standards (used to illuminate the lot) and from headlights on vehicles entering and exiting the lot (UCR 2005).

Other sources of glare include reflective surfaces such as pavement, building exteriors, and glass from the built up area in the northeastern corner of West Campus. Glare into buildings form the reflected sunlight off of adjacent buildings is generally minimized on the West Campus due to the generally low density of development, the relatively low average height of buildings (e.g., one to six stories), the extent of mature trees and landscaping, and the limited use of reflective glass surfaces in existing buildings (UCR 2005).

Off-campus sources of light and glare include streets in the vicinity of the campus (from street lights and headlights), the I-215-SR/60 freeway (although landscaping limits the visibility of headlights and lighted signs at many locations), and commercial land uses along the major streets, including University Avenue, Chicago Avenue, and Iowa Avenue (UCR 2005).

4.1.3 REGULATORY FRAMEWORK

There are no federal, State, or local regulations for aesthetics that are applicable to the UCR campus.

4.1.4 IMPACTS AND MITIGATION MEASURES

4.1.4.1 Significance Criteria

The impacts on aesthetics from the implementation of the proposed project would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Have a substantial adverse effect on a scenic vista
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway
- Substantially degrade the existing visual character or quality of the site and its surroundings
- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area

4.1.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the proposed project and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR.

- Have a substantial adverse effect on a scenic vista

On the West Campus, panoramic views of the adjacent mountains are available from Parking Lot No. 30 and at locations within the agricultural teaching and research fields. However, while these views are long

range, include relatively few structures, and are limited to relatively clear days, they are not necessarily scenic due to the existing agricultural development and lack of unique landforms and native vegetation. In addition, these locations on the West Campus are also not readily accessible as key vantage points for observing scenic vistas. Finally, while Parking Lot No. 30 is publicly accessible, it is not considered a public gathering place and therefore not considered to afford scenic views. Therefore, implementation of the proposed 2005 LRDP Amendment 2 would not have a substantial adverse effect on a scenic vista, and this impact is considered less than significant.

- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway

The West Campus is generally bound by University Avenue on the north, the I-215/SR-60 freeway and Canyon Crest Drive on the east, Le Conte Drive on the south, and Chicago Avenue on the west. None of these roadways are officially designated or identified as eligible for designation as a State scenic highway. Therefore, implementation of the proposed 2005 LRDP Amendment 2 would not adversely affect a scenic highway, and no impact would occur.

- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area

The development of the Campus Reserve site with housing would introduce new sources of light and glare to this area of the campus where the addition of new light and glare sources was not anticipated at the time that the 2005 LRDP was prepared. The development of SOM facilities, the relocation of the two West Campus parking garages, and the reconfiguration of open space on the West Campus would also introduce new sources of light and glare to the West Campus, but in areas that were previously designated for development in the 2005 LRDP, the impact of which was previously analyzed in the 2005 LRDP EIR. The impact of the proposed land use changes related to light and glare does not exceed the significance conclusion for the development on the West Campus reached in the 2005 LRDP EIR and would similarly be reduced to a less than significant level with the implementation of mitigation measures previously adopted by the University in conjunction with its adoption of the 2005 LRDP.

4.1.4.3 Methodology

As a conceptual land use plan, the proposed 2005 LRDP Amendment 2 helps guide the siting of future physical development, but does not commit UCR to any specific projects or the location of those projects. Therefore, this EIR evaluates aesthetic impacts from the probable location of future development, based on the land use plan included in the proposed Amendment 2 to the 2005 LRDP. Impacts from the implementation of the proposed 2005 LRDP Amendment 2 are evaluated by comparing existing land

uses to proposed future land uses to determine whether future development would result in adverse effects to the visual character of the West Campus and its surroundings.

The potential for degradation of visual character of the campus and its surroundings is evaluated in terms of a substantial adverse change in the visual character or quality, including a change in land use, and development of currently undeveloped land. Visual change that is compatible with existing patterns of development would not be considered a significant impact.

4.1.4.4 Project Impacts and Mitigation Measures

Impact 4.1-1 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and Programs and Practices, would not substantially degrade the visual character or quality of the campus and the immediate surrounding area. The impact would be less than significant.**

The proposed 2005 LRDP Amendment 2 is primarily focused on the West Campus and is intended to provide for the development of a school of medicine in this portion of the UCR campus, a land use that was not envisioned in the 2005 LRDP. Implementation of this proposed Amendment 2 to the 2005 LRDP would place the school of medicine at the northeast corner of Iowa Avenue and MLK on the West Campus, designate a location for two future parking structures to sites adjacent to the freeway, replace the Grove open space concept with the Gage Canal Mall open space concept, and result in the development of the Campus Reserve site at the northeast corner of MLK and Chicago Avenue with housing uses.

As with any development on the campus, development of the West Campus under the amended 2005 LRDP, would be guided by the UCR design review process which is required for all campus development projects prior to approval. This design process is guided by the 2007 Campus Design Guidelines and the Campus Design Review Board and through various Campus committees and includes evaluation of factors such as the proposed site, compatibility with adjacent uses, building mass and form, roof profile, architectural details and fenestration, texture, color, quality of building materials, landscaping, and focal views that could be affected by each proposed project. Future development of the campus, including the areas of the West Campus that are designated for the siting of the medical school, housing and parking structures, would be fully reviewed under this design review process before approval. In addition, all new facilities on the West Campus would be guided as applicable by a range of 2005 LRDP Planning Strategies (PS) and are assumed as part of the proposed project. The following 2005 LRDP Planning Strategies are relevant to preservation or enhancement of the visual character or

quality of the campus and the surrounding area with minor changes as indicated by strikeout/underline format:

PS Land Use 1	Achieve academic core densities of 1.0 FAR or higher on the East and 1.6 to 1.9 FAR on the West Campus in order to achieve a balance of academic land area versus other required uses.
PS Land Use 2	In order to achieve these densities of 1.0 FAR, infill sites in the partially developed East Campus academic core, and expand to the West Campus academic zone immediately adjacent to the I-215/SR-60 freeway, maintaining a compact and contiguous academic core.
PS Open Space 4	Provide landscaped buffers and setbacks along campus edges, such as Valencia Hill Drive and its extension south of Big Springs Road, Martin Luther King Jr. Boulevard, and the I-215/SR-60 freeway.
PS Open Space 7	Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space.
PS Campus & Community 1	Provide sensitive land use transitions and landscaped buffers where residential off-campus neighborhoods might experience noise or light from UCR activities.
PS Development Strategy 1	Establish a design review process to provide regular review of building and landscape development on campus.
PS Development Strategy 2	Review and update as needed the 2007 Campus Design Guidelines and the Campus Landscape Guidelines to ensure conformity with LRDP Planning Strategies.
PS Development Strategy 3	Review other plans or studies that may be prepared, such as district, sub-area plans, or transportation plans, for conformity with the goals and design intent of the LRDP.

In addition, the visual character and quality of the campus and surrounding area would also be preserved and enhanced with the following existing campus Programs and Practices (PP) and are assumed as part of the proposed project:

PP 4.1-1	The Campus shall provide design architects professionals with the 2007 Campus Design Guidelines and instructions to implement the guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design. (This is identical to Land Use PP 4.9-1(a).)

PP 4.1-2(a) The Campus shall continue to provide design architects professionals with the 2007 Campus Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the Guidelines with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible.

(This is identical to Land Use PP 4.9-1(b).)

LRDP PS Development Strategy 1 would require design review of building and landscape development, which would ensure consideration of visual quality impacts of individual buildings, facilities, and parking structures. Continued implementation of PP 4.1-1 and PP 4.1-2(a) would require that buildings be designed to be consistent with the Campus Design Guidelines. Consequently, new development would be built with consistent architectural themes, and provide a unified visual setting on the West Campus. Conformance with the Campus Design Guidelines would soften the visual effects of buildings by providing landscaping and would provide a cohesive landscape character throughout the West Campus. As such, new development would be built in a manner that is consistent with the scale and style of existing on-campus development, and would reinforce a cohesive campus environment.

The placement of SOM facilities at the northeastern corner of MLK and Iowa Avenue would result in higher density development in the *SOM* precinct with buildings along MLK and the surrounding SOM Quad six to seven stories in height and the medical school education or other signature building up to 12 stories high. Parking structures located at the perimeter of the precinct would be at least seven or eight stories above grade. The density of the development in the *SOM* precinct would be similar to existing development along University Avenue to the north of the SOM site, and thus would be compatible with existing development in the area, and the high-rise development that is commonly encountered adjacent to freeways.

The relocation of the two parking structures would place both future structures along the southwest side of the I-215/SR-60 freeway and would result in the relocation of the Caltrans Maintenance Yard (to another site). The visual character of the two parking structure sites is dominated by the I-215/SR-60 freeway and the placement of the proposed parking structures at these locations would be consistent with the high-rise development along the south side of the freeway west of University Avenue. Therefore, the future parking structures at the proposed locations would not substantially degrade the existing visual character of the area.

The reconfiguration of West Campus open space would place a landscaped open space along the Gage Canal Mall and in the proposed *Academic* and *SOM* precincts. The addition of landscaped open space due to the reconfiguration of West Campus Grove concept to the Gage Canal Mall concept would enhance the

visual character and quality of the West Campus through its botanical/demonstration garden potential and pedestrian/bicycle use, and thus would have a beneficial effect for this portion of the West Campus.

Development of the Campus Reserve site would result in the replacement of *agricultural teaching and research fields* with *housing* and *open space*. The introduction of residential structures would change the visual character of the Campus Reserve site, and would be most visible along the edges of Chicago Avenue, MLK, and Cranford Avenue. The proposed *housing* and *open space* uses on the Campus Reserve site would be low-rise development similar to existing uses located on both sides of Chicago Avenue north of MLK, and therefore would not substantially degrade the existing visual character along this portion of Chicago Avenue.

While the visual character of the area would change, the aesthetic quality of the West Campus would not be degraded. With implementation of the 2005 LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, implementation of the proposed 2005 LRDP Amendment 2 would not substantially degrade the visual character or quality of the campus and its surroundings, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

4.1.4.5 Cumulative Impacts

The geographic context for the analysis of cumulative aesthetic impacts includes the area immediately surrounding the West Campus that can be viewed together with development on the edge of the campus. The analysis accounts for all anticipated cumulative growth within this geographic area, as represented by full implementation of the City of Riverside General Plan.

Impact 4.1-2 **Cumulative development, including the proposed 2005 LRDP Amendment 2, would not substantially degrade the visual character or quality of the campus and the immediate surrounding area. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.**

Existing development to the north of the West Campus along University Avenue consists of a collection of retail shops, fast food outlets and hotels and motels built at a higher density than surrounding areas. Development to the east of the West Campus consists of the I-215/SR-60 freeway corridor and academic buildings on the East Campus that are also built at a higher density than the surrounding areas. Development to the west and south of the West Campus consists of low-rise single-family development.

With respect to visual character and/or quality, future development in the areas adjacent to the West Campus will continue to be guided by the land use designations and planning policies provided in the City General Plan, the Zoning Code, and any applicable ordinances and design requirements. Impacts associated with visual character and/or quality was determined not to be cumulatively considerable on a regional scale, as reflected in the City General Plan EIR.

As discussed above, the overall conversion of vacant and agricultural lands to urban uses in the area surrounding the campus would not degrade the visual character of the area. As discussed above, development of the SOM, parking structures, Gage Canal Mall, and the Campus Reserve site would be visually consistent with the surroundings and the contribution of the proposed 2005 LRDP Amendment 2 to these impacts would not be cumulatively considerable.

Mitigation Measures: No mitigation is required.

4.1.5 REFERENCES

City of Riverside. 2007. City of Riverside 2025 General Plan, November.

Riverside, County of. 2003. County of Riverside General Plan, October.

University of California, Riverside (UCR). 2005. Final Environmental Impact Report on the 2005 Long Range Development Plan, SCH No. 2005041164.

4.2 AGRICULTURAL RESOURCES

4.2.1 INTRODUCTION

This section describes existing agricultural resources at the UCR campus and describes whether implementation of the proposed 2005 LRDP Amendment 2 would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, to nonagricultural uses.

The information included in this section regarding the amount and location of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) was obtained from the Department of Conservation, Farmland Mitigation and Monitoring Program (FMMP).

No public or agency comments related to agricultural resources were received in response to the Notice of Preparation issued for this EIR.

4.2.2 EXISTING CONDITIONS

4.2.2.1 On-Campus Agricultural Resources

The College of Natural and Agricultural Sciences and related research units manage approximately 13.5 acres of land on the East Campus and approximately 489 acres on the West Campus as agricultural teaching and research fields and related support functions. These lands are primarily located on soils in the Arlington, Buren, and Hanford series, which generally consist of well-drained silty fine to coarse sands, with deeper layers of silt and relatively clean sand. Weakly cemented alluvium or deeper loams are typically located 18 to 37 inches below the upper layers. In the Hanford soils, harder, more consolidated material are typically located 40 to 60 inches below the surface while extensive hardpan areas of cemented alluvium can occur from 21 to 54 inches below the surface. Slopes on these lands are low, and range from zero to less than 8 percent (UCR 2005).

Prime Farmland, Farmland of Statewide Importance, and Unique Farmland

The UCR campus currently has a total of 481.7 acres of Prime Farmland and Farmland of Statewide Importance (defined below), which are primarily located on the West Campus (UCR 2005). **Figure 4.2-1, Important Farmland on the UCR Campus**, shows the location of the Prime Farmland, Farmland of Statewide Importance, and Unique Farmland on the UCR campus. Definitions of these farmland types are provided in **subsection 4.2.3** below.

Agricultural Teaching and Research Fields

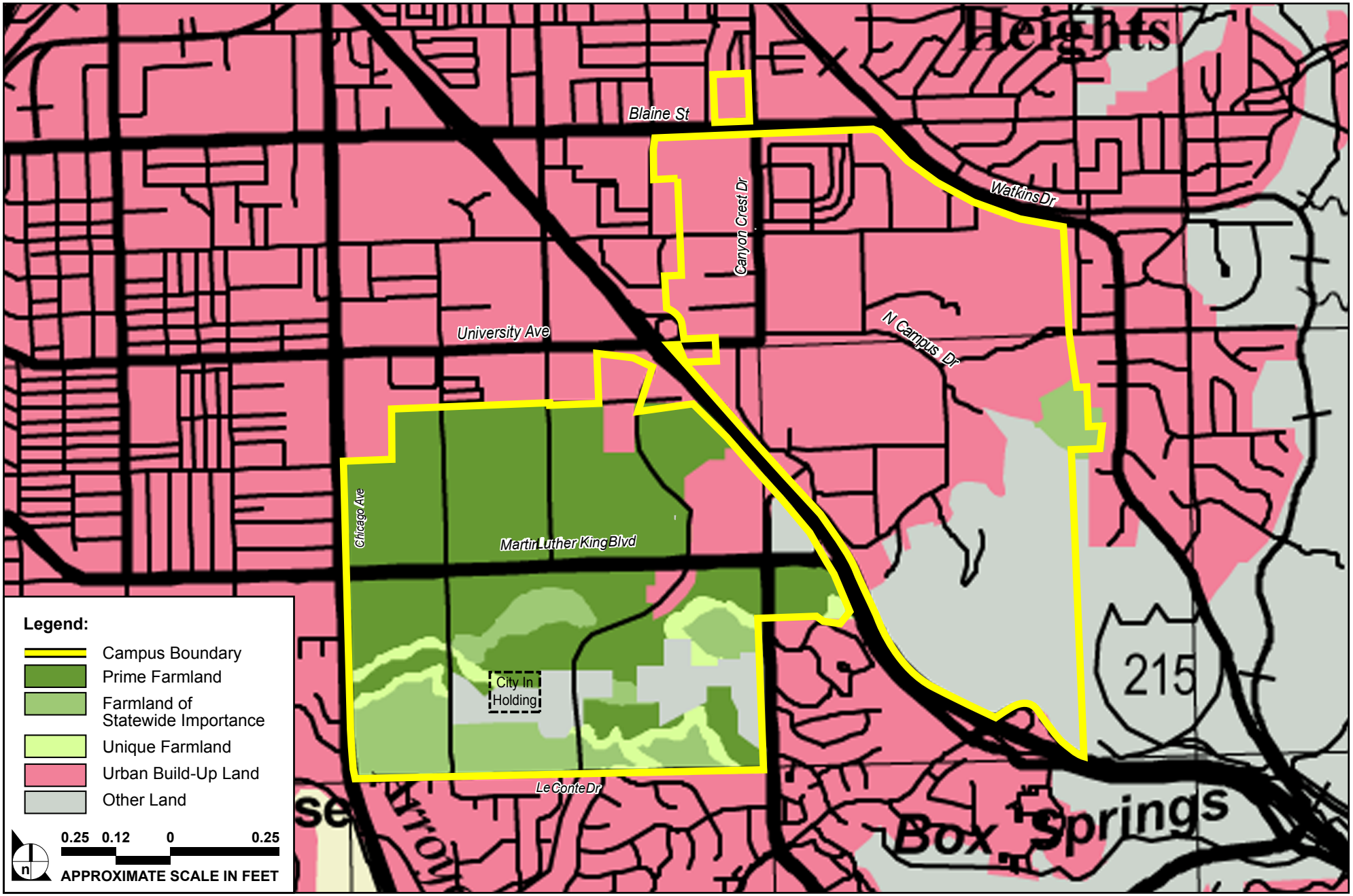
Nearly half of the campus consists of agricultural teaching and research fields, most of which are on the West Campus. Only approximately 13.5 acres of agricultural land are currently allocated for agricultural teaching and research on the East Campus, while 489 acres on the West Campus are used as agricultural teaching and research fields for the College of Natural and Agricultural Sciences and related research units. All agricultural land on campus is designated as the UC Citrus Research Center and Agricultural Experiment Station [CRC-AES]. Within the teaching and research fields on campus, there are approximately 355 acres of arable land, of which 300 acres are in permanent crops and 55 acres are in row crops (UCR 2005).

Plant species associated with the cultivated areas vary but generally include collections of citrus, avocados, jojoba, guayule, asparagus, figs, turf, ornamentals, palms, row crops, and the germplasm collection. The fields are dominated by citrus orchards to the north of Martin Luther King Jr. Boulevard (MLK) and by experimental plots to the south. Most of the fields north of MLK undergo limited, but systematic, disturbances resulting from weed control, citrus harvesting, and other activities associated with maintenance. The fields south of MLK contain a variety of seasonal experimental plots used by students and faculty, and consequently have undergone different and irregular types of disturbances related to changes in research projects. Some sections of these fields have permanent groves and crops that undergo regular maintenance, other sections have various crops planted from year to year, and some plots are utilized in different ways both within and between years (UCR 2005).

Practices employed by the campus to mitigate and curb topsoil erosion on the agricultural fields include cover crops, irrigation water reclamation, maintenance of drainage system, and drip and mini-sprinkler irrigation applications (UCR 2005).

UCR Citrus Variety Collection

The Citrus Variety Collection was initiated in 1910 soon after the establishment of the Citrus Experiment Station (CES) at the original site in Riverside at the base of Mount Rubidoux. In June of 1917, the collection was moved to 5 acres of land adjacent to the new site of the CES at the current location. The purposes of the Citrus Variety Collection are threefold: (1) to conserve and evaluate trueness-to-type of citrus and citrus relatives; (2) to provide a resource of citrus genetic diversity for research; and (3) to extend knowledge about citrus diversity (UCR 2005).



SOURCE: Impact Sciences, Inc. – June 2010

FIGURE **4.2-1**

Important Farmland on the UCR Campus

The collection has expanded since 1917, and currently, the Citrus Variety Collection occupies approximately 26 acres on the UCR West Campus, south of MLK and east and west of Canyon Crest. Additional lands are located off campus including 2 acres at the UC South Coast Research and Extension Center in Irvine and 2 acres at the Coachella Valley Agricultural Research Station in Thermal. In total, the Citrus Variety Collection contains two trees of approximately 1,000 types within the genus Citrus and within 27 of the 33 related genera in the subfamily *Aurantioideae* of the *Rutaceae*. Approximately 670 of holdings are within the subgenus Citrus and encompass virtually all of the commercially important and historic citrus varieties of the world (UCR 2005).

4.2.2.2 Off-Campus Agricultural Resources

UC-Owned Agricultural Lands

UCR Agricultural Operations manages and operates one off-campus field station to support agricultural research, plus the 420-acre Citrus Research Center and Agricultural Experiment Station (CRC-AES) located on the West Campus. The off-campus field station is the 540-acre Coachella Valley Agricultural Research Station (CVARS), located 80 miles southeast of the campus. The CVARS is ideally situated to become the focal point of research on issues of importance to agriculture in desert regions (UCR 2005).

Private Near-Campus Agricultural Lands

Because of the campus setting in the eastern portion of the City of Riverside, the proximity of the Box Springs Mountains, and primarily residential development in surrounding areas, very little of the extensive agricultural lands found previously around the campus remain today. Other scattered agricultural lands within the City of Riverside are generally located adjacent to hillsides or along topographic ridges or gullies (UCR 2005).

4.2.3 REGULATORY FRAMEWORK

4.2.3.1 State Programs

Farmland Mitigation and Monitoring Program

The California Department of Conservation is charged with developing programs for the protection of the agricultural resources of the state. Based on data from the Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture, the California Department of Conservation has developed a Farmland Mapping and Monitoring Program (FMMP) to classify the different agricultural soil types according to their ability to sustain agricultural crops (UCR 2005).

The mapping program was created in 1982 in response to a need to assess the location, quality, and quantity of agricultural lands to deal with the loss of important farmland to development. The mapping program is used under CEQA and other State laws (including Government Code Section 65561) to measure the impact of eliminating different kinds of lands on the production of food and other agricultural products. Appendix G of the *State CEQA Guidelines* refers to this classification system for the evaluation of the significance of a project's impacts on agricultural resources (UCR 2005).

The FMMP's Important Farmland Maps classify agricultural lands located on the UCR campus as "Prime Farmland," "Unique Farmland" and "Farmland of Statewide Importance." The broad definitions of these three categories are provided below:

- Prime Farmland is land with the best combination of physical and chemical features for the long-term production of agricultural crops. This land can economically produce sustained high yields when treated and managed according to accepted modern farming methods. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the current mapping date.

- Unique Farmland is land of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

- Farmland of Statewide Importance is land with a good combination of physical and chemical features but with minor shortcomings such as greater slopes or with less ability to hold and store moisture. The land must have been cropped at some time prior to the mapping date.

In determining whether a farmland is considered to be Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, the soil must meet the physical and chemical criteria for Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as determined by the USDA NRCS. NRCS compiles lists of which soils in each survey area meet the quality criteria. Factors considered in qualification of a soil by NRCS include water moisture regimes, available water capacity, and developed irrigation water supply, soil temperature range, acid-alkali balance, water table, soil sodium content, flooding, erodability, permeability rate, rock fragment content, and soil rooting depth (UCR 2005).

Williamson Act

The Williamson Act program, officially known as the California Land Conservation Act, was adopted in 1965. The California Department of Conservation administers this program, which allows land used in farming or ranching to be taxed at a rate based on the actual use of the land for agricultural purposes as opposed to its unrestricted market value. In return, the landowner commits to restricting use of the land to agricultural or open space for at least 10 years (UCR 2005).

4.2.3.2 Riverside County

In 1966, the County of Riverside adopted Ordinance 509 (subsequently amended as Ordinance 509.2 in 1988), which established uniform rules for the designation of agricultural preserves in accordance with the California Land Conservation (or Williamson) Act. As noted above, no land area on the UCR campus is designated as an agricultural preserve or is covered by a Williamson Act contract (UCR) 2005.

4.2.3.3 City of Riverside

In 1979, the voters of the City of Riverside approved Proposition R, the taxpayers' Initiative Ordinance to reduce Costly Urban Sprawl by Preserving Riverside's Citrus and Agricultural Lands, Its Unique Hills, Arroyos and Victoria Avenue. Proposition R extended the Residential Agriculture (RA) Zone to additional properties within the City, reduced allowable residential density in the zone, and extended the Residential Conservation (RC) Zone to protect natural slopes and limit residential density in these areas. In 1986, the voters approved Measure C, the Citizen's Rights Initiative to reduce Costly Urban Sprawl to Reduce Traffic Congestion, to Minimize Utility Rate Increases, and to Facilitate Preservation of Riverside's Citrus and Agricultural Lands, its Scenic Hills Ridgelines, Arroyos and Wildlife Areas. Measure C strengthened provisions of Proposition R and in effect became the implementation mechanism for Proposition R (UCR 2005).

The zoning code of the City of Riverside specifies that the Residential Agricultural zone is:

> *…intended as districts for general agricultural purposes with homes of grove owners and farmers on their groves or farms, and for occasional other single-family residences which preserve the agricultural character of the district.*

The zoning code specifies that the Residential Conservation zone is:

> *intended as single-family residential districts to be located on prominent ridges, hilltops and hillsides, slopes, arroyos, ravines and canyons, and other areas with high visibility or topographic features that warrant sensitive development to implement the objectives of the general plan…*

The City of Riverside has zoned the entire UCR campus as "Public Facilities." This is regardless of the different land use areas located on the campus. As a state entity, the University of California is constitutionally exempt from local land use controls, and thus is not subject to the zoning code of the City of Riverside or the provisions of Proposition R or Measure C (UCR 2005).

4.2.4 IMPACTS AND MITIGATION MEASURES

4.2.4.1 Significance Criteria

The impacts on agricultural resources from the implementation of the proposed project would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of, forest land as defined in Public Resources Code section 12220(g) or timberland as defined in Public Resources Code section 4526.
- Result in the loss of forest land or conversion of forest land to non-forest use.
- Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

4.2.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR.

- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) or timberland (as defined in Public Resources Code section 4526).

As discussed in the Initial Study, no portion of the UCR campus is zoned for forest, timber land, or agricultural use. In addition these lands are not under a Williamson Act contract. Therefore, implementation of the proposed 2005 LRDP Amendment 2 would not conflict with existing zoning for forest, timber land, or agricultural use, or a Williamson Act contract.

- Result in the loss of forest land or conversion of forest land to non-forest use.

As discussed in the Initial Study, no part of the UCR campus is under forests. Furthermore, the UCR campus and surrounding area does not include any forest land or timber land. Therefore, implementation of the proposed 2005 LRDP Amendment 2 would not result in the loss of forest land or conversion of forest land to non-forest use.

- Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

As discussed in the Initial Study, implementation of future development on campus would be guided by a range of LRDP Planning Strategies, including PS Land Use 2, which seeks to maintain a compact and contiguous core, and PS Land Use 3, which would limit the conversion of agricultural land on the West Campus. Implementation of the proposed 2005 LRDP Amendment 2 would not involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

4.2.4.3 Methodology

To estimate the potential for implementation of the proposed 2005 LRDP Amendment 2 to result in the direct or indirect loss of agricultural uses and important farmland on the UCR campus, the existing 2005 LRDP Land Use map was compared to the proposed land use map to identify new important farmland areas that would be developed under the amended LRDP. Additionally, LRDP Planning Strategies were reviewed to determine the potential for indirect effects to non-UC agricultural lands.

4.2.4.4 Project Impacts and Mitigation Measures

Impact 4.2-1 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies, would result in the conversion of approximately 37.3 acres of Prime Farmland to nonagricultural uses. The impact would be significant.**

The 2005 LRDP EIR evaluated farmland impacts and found 125 acres of Prime Farmland would be converted to urban uses. Although the conversion of Prime Farmland on the West Campus to non-agricultural uses was anticipated and evaluated in the 2005 LRDP EIR, the conversion of the Campus Reserve site was not included in that evaluation. The 2005 LRDP EIR assumed that the Campus Reserve site would remain in agricultural production as an experimental orchard until needed for a future unknown use at which time an amendment to the LRDP would be necessary.

The proposed 2005 LRDP Amendment 2 would introduce a new land use on the West Campus at the northeast corner of Iowa Avenue and MLK instead of using the Campus Reserve site at the northeast corner of Chicago Avenue and MLK as originally anticipated. It has been determined that the school of medicine program would require 38.7 acres of land. This is the minimum amount of land needed, and it is based on a 1.9 FAR, which is a higher density compared to the FAR of 1.0 that the Campus committed to in the 2005 LRDP per PS Land Use 2. The proposed location of the School of Medicine at this site

would displace 38.7 acres of *Housing*, *Academic* and *Open Space* that was previous designated for the site in the 2005 LRDP. UCR has determined that the housing that would be displaced is necessary in order to meet its goal of housing 50 percent of students on campus. The campus has proposed to designate the Campus Reserve site for *Housing* and *Open Space*. Therefore, implementation of the proposed 2005 LRDP Amendment 2 would result in the conversion of 37.3 acres of Prime Farmland to non-agricultural uses on the Campus Reserve site.

Some of the agricultural teaching and research activities that would be displaced by the proposed Amendment 2 to the 2005 LRDP could be relocated to the CVARS discussed above. However, the proposed 2005 LRDP Amendment 2 would still convert approximately 37.3 acres of Prime Farmland into nonagricultural uses. Thus, while the research conducted on the Campus Reserve site could be transferred to the CVARS, it would not offset the net reduction in farmland in the region. As no new farmlands are being created in the vicinity of the campus, no feasible mitigation has been identified to reduce this significant impact.

Additionally, the proposed Amendment 2 to the 2005 LRDP includes the relocation of two parking facilities on the West Campus, and the reconfiguration of open space on the West Campus. The remaining elements of the proposed 2005 LRDP Amendment 2 are programmatic in nature and would not result in the loss of farmland. The relocation of parking facilities, and the reconfiguration of the open space design on the West Campus would result in development on agricultural lands that were previously accounted for and analyzed in the 2005 LDRP EIR. The agricultural teaching and research fields on the West Campus south of MLK would be preserved to limit conversion of West Campus agricultural lands to the area north of MLK. Implementation of the proposed 2005 LRDP Amendment 2 would not result in any loss of Prime Farmland on the East Campus.

Consistent with UCR's current practice, the development of the campus under the amended 2005 LRDP would be guided as applicable by the following LRDP Planning Strategies (PS) which are focused on the preservation of agricultural land uses and are assumed as part of the proposed project:

PS Land Use 1	Achieve academic core densities of 1.0 FAR or higher on the East Campus and 1.6 to 1.9 FAR on the West Campus in order to achieve a balance of academic land area versus other required uses.
PS Land Use 2	In order to achieve these development densities, infill sites in the partially developed East Campus academic core, and expand to the West Campus academic zone immediately adjacent to the I-215/SR-60 freeway, maintaining a compact and contiguous academic core.
PS Land Use 3	Maintain the teaching and research fields on the West Campus south of Martin Luther King Jr. Boulevard.

Even with implementation of the identified 2005 LRDP Planning Strategies, implementation of the proposed 2005 LRDP Amendment 2 would convert approximately 37.3 acres of Prime Farmland, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use, and this impact would remain significant.

Mitigation Measures: No mitigation is feasible.

Significance after Mitigation: The impact would be significant and unavoidable.

4.2.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative agricultural impacts includes the County of Riverside, in which vast acres of farmland are located. The analysis accounts for all anticipated cumulative growth within this geographic area, as represented by full implementation of the County of Riverside General Plan.

Impact 4.2-2 **Cumulative Development, including the proposed 2005 LRDP Amendment 2, would convert Prime Farmland to non-agricultural uses. The contribution of the proposed 2005 Amendment 2 to this cumulative impact would be cumulatively considerable.**

As described above, the on-campus agricultural research fields are classified as Prime Farmland according to the FMMP. The projected buildout of the City of Riverside 2025 General Plan encompasses other reasonably foreseeable development in the vicinity of the campus. Buildout of the City's general plan could result in the conversion of up to 68.0 acres of Prime Farmland to urban uses (City of Riverside 2007b). The conversion of a portion of the on-campus agricultural research fields to non-agricultural uses, in conjunction with other reasonably foreseeable development that involves the conversion of farmland in the region to urban uses, would result in a cumulatively considerable loss of Prime Farmland. No new farmlands are being created in the vicinity of the campus and no feasible mitigation has been identified to reduce the direct loss of farmland as a result of the proposed 2005 LDRP Amendment 2. Therefore, the conversion of approximately 37.3 acres of Prime Farmland under the proposed 2005 LRDP Amendment 2 to non-agricultural uses would contribute to the regional trend of loss of farmland. The contribution of the proposed Amendment 2 to the 2005 LRDP to cumulative impacts on Prime Farmland would be cumulatively considerable.

Mitigation Measures: No mitigation is feasible.

Significance after Mitigation: The impact would be significant and unavoidable.

4.2.5 REFERENCES

City of Riverside. 2007a. *Title 19 Zoning Ordinance*.

City of Riverside. 2007b. General Plan 2025 Final Programmatic Environmental Impact Report. SCH No. 2004021108.

County of Riverside. 1988. County of Riverside County Code, Ordinance 509.

University of California, Riverside (UCR). 2005. Long Range Development Plan Final Environmental Impact Report. SCH No. 2005041164.

4.3 AIR QUALITY

4.3.1 INTRODUCTION

This section evaluates the potential impacts on air quality resulting from implementation of the proposed 2005 LRDP Amendment 2. This includes the potential for the proposed Amendment 2 to the 2005 LRDP to conflict with or obstruct implementation of the applicable air quality plan, to violate an air quality standard or contribute substantially to an existing or projected air quality violation, to result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment, to expose sensitive receptors to substantial pollutant concentrations, or to create objectionable odors affecting a substantial number of people.

Data used to prepare this section were taken from various sources, including the South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook and the 2007 Air Quality Management Plan (AQMP), as amended; the UCR 2005 LRDP Amendment 2 EIR Traffic Impact Study (included as **Appendix 4.14**); and the University of California, Riverside Health Risk Assessment (on file with the Office of Capital Resource Management). Bibliographic entries for reference materials appear in **subsection 4.3.5**, **References** of this section.

The SCAQMD in its letter in response to the NOP requested that UCR provide the District a copy of the Draft EIR along with all pertinent appendices. The SCAQMD also recommended that the University use the SCAQMD's *CEQA Air Quality Handbook* in the preparation of the air quality analysis and that the EIR should identify any potential adverse effects that could occur from all phases of the project and from all potential sources. The SCAQMD requested that impacts from both construction and operation of the project should be calculated, including impacts from direct and indirect sources. The SCAQMD also recommended that $PM_{2.5}$ emissions be calculated and compared to the SCAQMD recommended thresholds; localized air quality impacts be evaluated and if the project attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, that a mobile source health risk assessment be prepared. Mitigation measures should be included to avoid or minimize all significant impacts. All of these scoping comments were considered in the analysis presented below.

4.3.2 EXISTING CONDITIONS

4.3.2.1 Existing Regional Air Quality

Background

The project site is located in the South Coast Air Basin (SoCAB or Basin), which consists of Orange County, Los Angeles County (excluding the Antelope Valley portion), and the western, non-desert portions of San Bernardino and Riverside counties.

Air quality is affected by both the rate and location of pollutant emissions. Meteorological conditions such as wind speed, wind direction, solar radiation, atmospheric stability, along with local topography heavily influence air quality by affecting the movement and dispersal of pollutants. Predominant meteorological conditions in the SoCAB are primarily light winds and shallow vertical mixing due to low-altitude temperature inversion. These conditions, when coupled with the surrounding mountain ranges, hinder the regional dispersion of air pollutants. The strength and location of a semi-permanent, high-pressure cell over the northern Pacific Ocean is a primary climatological influence on the SoCAB, as is the ocean, which moderates the local climate by acting like a large heat reservoir. As a result of these influences, warm summers, mild winters, infrequent rainfall, and moderate humidity typify climatic conditions through most of the Basin. These meteorological conditions, in combination with regional topography, are conducive to the formation and retention of ozone and urban smog.

Annual average temperatures throughout the SoCAB vary from the low to middle 60s degrees Fahrenheit (°F). However, due to decreased marine influence, the eastern portion of the Basin shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SoCAB, and annual average minimum temperatures are 48°F in downtown Los Angeles, 49°F in San Bernardino, and 55°F in Long Beach. July and August are the warmest months in the SoCAB, and annual average maximum temperatures are 83°F in downtown Los Angeles, 95°F in San Bernardino, and 85°F in Long Beach. All portions of the SoCAB have recorded maximum temperatures above 100°F.

Although the climate of the SoCAB can be characterized as semi-arid, the air near the land surface is moist on most days because of the presence of a marine layer. Humidity restricts visibility in the SoCAB, also increasing the conversion of sulfur dioxide (SO_2) to sulfates. The annual average relative humidity is 71 percent along the coast and 59 percent inland. Because the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast. More than 90 percent of the region's rainfall occurs from November through April. Annual average rainfall varies from approximately 9 inches in Riverside to 14 inches in downtown Los Angeles. Monthly and yearly rainfall totals are variable. Summer rainfall usually consists of widely

scattered thundershowers near the coast and slightly heavier shower activity in the eastern portion of the region near the mountains.

Regional Air Quality

Air pollutants of concern in the SoCAB are primarily generated by two categories of sources: stationary and mobile. Stationary sources are known as "point sources," which have one or more emission sources at a single facility, or "area sources," which are widely distributed emissions. Point sources are usually associated with manufacturing and industrial uses and include sources such as refinery boilers or combustion equipment that produces electricity or process heat. Examples of area sources include residential water heaters, painting operations, lawn mowers, agricultural fields, landfills, and consumer products, such as lighter fluid or hair spray. Mobile sources refer to operational and evaporative emissions from motor vehicles. Within the SoCAB, mobile sources account for approximately 59 percent of volatile organic compound (VOC) emissions, 90 percent of nitrogen oxide (NO_X) emissions, 95 percent of carbon monoxide (CO) emissions, 55 percent of sulfur oxides (SO_X) emissions, 15 percent of respirable particulate matter (PM_{10}) emissions, and 34 percent of fine particulate matter ($PM_{2.5}$) emissions.[1]

The criteria pollutants relevant to the proposed project and of concern in the SoCAB are briefly described below. While VOCs are not considered to be criteria pollutants, they are widely emitted from land use development projects and participate in photochemical reactions in the atmosphere to form ozone (O_3); therefore, VOCs are relevant to the proposed project and are of concern in the SoCAB.

- **Ozone (O_3).** O_3 is a gas that is formed when VOCs and nitrogen oxides (NO_X), both byproducts of internal combustion engine exhaust and other sources undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.

- **Volatile Organic Compounds (VOCs).** VOCs are compounds comprised primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Adverse effects on human health are not caused directly by VOCs, but rather by reactions of VOCs to form secondary air pollutants, including ozone. VOCs are also referred to as reactive organic compounds (ROCs) or reactive organic gases (ROGs). VOCs themselves are not "criteria" pollutants; however, they contribute to formation of O_3.

- **Nitrogen Dioxide (NO_2).** NO_2 is a reddish-brown, highly reactive gas that is formed in the ambient air through the oxidation of nitric oxide (NO). NO_2 is also a byproduct of fuel combustion. The principle form of NO_2 produced by combustion is NO, but NO reacts quickly to form NO_2, creating the mixture of NO and NO_2 referred to as NO_X. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_X is only

1 California Air Resources Board, "2008 Estimated Annual Average Emissions – South Coast Air Basin,"http://www.arb.ca.gov/ei/maps/basins/abscmap.htm. 2009.

potentially irritating. NO_2 absorbs blue light, the result of which is a brownish-red cast to the atmosphere and reduced visibility.

- **Carbon Monoxide (CO).** CO is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest during winter mornings, with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines and motor vehicles operating at slow speeds are the primary source of CO in the Basin, the highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

- **Sulfur dioxide (SO_2).** SO_2 is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high-sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When sulfur dioxide oxidizes in the atmosphere, it forms sulfates (SO_4).

- **Respirable Particulate Matter (PM_{10}).** PM_{10} consists of extremely small, suspended particles or droplets 10 micrometers or smaller in diameter. Some sources of PM_{10}, like pollen and windstorms, are naturally occurring. However, in populated areas, most PM_{10} is caused by road dust, diesel soot, and combustion products, abrasion of tires and brakes, and construction activities.

- **Fine Particulate Matter ($PM_{2.5}$).** $PM_{2.5}$ refers to particulate matter that is 2.5 micrometers or smaller in size. The sources of $PM_{2.5}$ include fuel combustion from automobiles, power plants, wood burning, industrial processes, and diesel-powered vehicles such as buses and trucks. These fine particles are also formed in the atmosphere when gases such as sulfur dioxide, NO_X, and VOCs are transformed in the air by chemical reactions.

- **Lead (Pb).** Pb occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne lead in the Basin. The use of leaded gasoline is no longer permitted for on-road motor vehicles, so most such combustion emissions are associated with off-road vehicles such as racecars that use leaded gasoline. Other sources of Pb include the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and secondary lead smelters.

The U.S. Environmental Protection Agency (EPA) is the federal agency responsible for setting the National Ambient Air Quality Standards (NAAQS). The air quality of a region is considered to be in attainment of the NAAQS if the measured ambient air pollutant levels are not exceeded more than once per year, except for O_3, PM_{10}, $PM_{2.5}$ and those based on annual averages or arithmetic mean. The NAAQS for O_3, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The California Air Resources Board (CARB) is the state agency responsible for setting the California Ambient Air Quality Standards (CAAQS). The air quality of a region is considered to be in attainment of the CAAQS if the measured ambient air pollutant levels for O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead are not exceeded, and other standards are not equaled or exceeded at any time in any consecutive three-year period. The NAAQS and CAAQS for each of the monitored pollutants and their effects on health are summarized in **Table 4.3-1, Ambient Air Quality Standards**.

Table 4.3-1
Ambient Air Quality Standards

Air Pollutant	Concentration/Averaging Time: State Standard (CAAQS)	Concentration/Averaging Time: Federal Primary Standard (NAAQS)	Most Relevant Health Effects
Ozone	0.09 ppm, 1-hr. avg. 0.070 ppm, 8-hr avg.	0.075 ppm, 8-hr avg. (three-year average of annual 4th-highest daily maximum)	(a) Pulmonary function decrements and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; and (f) Property damage
Nitrogen Dioxide[1]	0.18 ppm, 1-hr avg. 0.030 ppm, annual arithmetic mean	0.100 ppm, 1-hr avg. (three-year avg. of the 98th percentile of the daily maximum 1-hour avg.) 0.053 ppm, annual arithmetic mean	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extrapulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration
Carbon Monoxide	20 ppm, 1-hr avg. 9.0 ppm, 8-hr avg.	35 ppm, 1-hr avg. (not to be exceeded more than once per year) 9 ppm, 8-hr avg. (not to be exceeded more than once per year)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses
Sulfur Dioxide[2]	0.25 ppm, 1-hr. avg. 0.04 ppm, 24-hr avg.	0.075 ppm, 1-hr avg. (three-year avg. of the 99th percentile)	Bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Respirable Particulate Matter (PM_{10})	50 μg/m³, 24-hr avg. 20 μg/m³, annual arithmetic mean	150 μg/m³, 24-hr avg. (not to be exceeded more than once per year on average over three years)	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; and (c) Increased risk of premature death from heart or lung diseases in the elderly
Fine Particulate Matter ($PM_{2.5}$)	12 μg/m³, annual arithmetic mean	35 μg/m³, 24-hr avg. (three-year average of 98th percentile) 15 μg/m³, annual arithmetic mean (three-year average)	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; and (c) Increased risk of premature death from heart or lung diseases in the elderly
Lead[3]	1.5 μg/m³, 30-day avg.	1.5 μg/m³, calendar quarter 0.15 μg/m³, three-month rolling average	(a) Increased body burden; and (b) Impairment of blood formation and nerve conduction

Air Pollutant	Concentration/Averaging Time: State Standard (CAAQS)	Concentration/Averaging Time: Federal Primary Standard (NAAQS)	Most Relevant Health Effects
Visibility-Reducing Particles	Reduction of visual range to less than 10 miles at relative humidity less than 70%, 8-hour avg. (10 AM–6 PM)	None	Visibility impairment on days when relative humidity is less than 70%.
Sulfates	25 μg/m^3, 24-hr avg.	None	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) Property damage
Hydrogen Sulfide	0.03 ppm, 1-hr avg.	None	Odor annoyance
Vinyl Chloride[3]	0.01 ppm, 24-hr avg.	None	Known carcinogen

Source: South Coast Air Quality Management District, Final Program Environmental Impact Report for the 2007 Air Quality Management Plan, (2007) Table 3.1-1, p. 3.1-3.
μg/m^3 = microgram per cubic meter.
ppm = parts per million by volume.
[1] *On January 25, 2010, the U.S. EPA promulgated a new 1-hour NO_2 standard. The new 1-hour standard is 0.100 parts per million (188 micrograms per cubic meter [μg/m^3]) and became effective on April 12, 2010.*
[2] *On June 3, 2010, the U.S. EPA issued a new 1-hour SO_2 standard. The new 1-hour standard is 0.075 parts per million (196 μg/m^3). The U.S. EPA also revoked the existing 24-hour and annual standards citing a lack of evidence of specific health impacts from long-term exposures. The new 1-hour standard becomes effective 60 days after publication in the Federal Register.*
[3] *CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*

In addition to criteria pollutants, the SCAQMD periodically assesses levels of toxic air contaminants (TACs) in the SoCAB. TACs are defined by California Health and Safety Code Section 39655:

> *"Toxic air contaminant" means an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the federal act (42 U.S.C. Sec. 7412(b)) is a toxic air contaminant.*

Between April 2004 and March 2006, the SCAQMD conducted the Multiple Air Toxics Exposure Study III (MATES III), which is a follow up to previous MATES I and II air toxics studies conducted in the South Coast Air Basin. The MATES III Final Report was issued in September 2008. The MATES III study, based on actual monitored data throughout the Basin, consisted of several elements. These included a monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize carcinogenic risk across the SoCAB from exposure to toxic air contaminants. The MATES III study applied a 2-kilometer (1.24-mile) grid over the South Coast Air Basin and reported carcinogenic risk within each grid space (covering an area of 4 square kilometers or 1.54 square miles). The study concluded that the average of the modeled air toxics concentrations measured at each of the monitoring stations in the SoCAB equates to a background cancer risk of approximately 1,200 in 1,000,000 primarily

due to diesel exhaust. The MATES III study also found lower ambient concentrations of most of the measured air toxics compared to the levels measured in the previous MATES II study conducted during 1998 and 1999. Specifically, benzene and 1, 3-butadiene, pollutants generated mainly from vehicles, were down 50 percent and 73 percent, respectively.[2] The reductions were attributed to air quality control regulations and improved emission control technologies.

4.3.2.2 Existing Local Air Quality

The SCAQMD has divided the SoCAB into Source Receptor Areas in which air quality monitoring stations are operated. The project site is located in the Metropolitan Riverside Source Receptor Area (SRA 23). The monitoring stations for this area are located at 5888 Mission Boulevard in the City of Riverside (Station No. 4144), approximately 5 miles northwest of the project site, and at 7002 Magnolia Ave, also in the City of Riverside (Station No. 4146), about 4 miles southwest of the project site. These stations monitor emission levels of CO, O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$.

Table 4.3-2, Ambient Pollutant Concentrations Registered in SRA 23 (Station No. 4144 and **4146),** lists the ambient pollutant concentrations registered and the exceedances of State and federal standards that have occurred at the abovementioned monitoring stations from 2006 through 2008, the most recent years in which data is available from the SCAQMD.[3] As shown, the SRA has registered values above State and federal standards for O_3, the State standard for PM_{10}, and the federal standard for $PM_{2.5}$. Values for lead and sulfate are not presented in the table below since ambient concentrations are well below the State standards in the area. Hydrogen sulfide, vinyl chloride, and visibility reducing particles were not monitored by CARB or the SCAQMD in Riverside County during the period of 2006 to 2008.

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2 South Coast Air Quality Management District, *Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES III) – Draft Report*, (2008) ES-2.

3 The SCAQMD verifies the ambient air quality data before making it available on its website. Air Pollutants levels determined to be caused by natural events (e.g., forest fires) are excluded because they do not count towards the air quality standards. CARB has 2009 data available on its website, but it has not gone through this process.

Table 4.3-2
Ambient Pollutant Concentrations Registered in SRA 23 (Stations No. 4144 and 4146)

Pollutant	Standards[1]	Year		
		2006	2007	2008
OZONE (O_3)				
Maximum 1-hour concentration monitored (ppm)		0.150	0.131	0.146
Maximum 8-hour concentration monitored (ppm)		0.116	0.111	0.116
Number of days exceeding State 1-hour standard	0.09 ppm	45	31	54
Number of days exceeding State 8-hour standard	0.070 ppm	59	69	88
Number of days exceeding federal 8-hour standard[2]	0.075 ppm	30	46	64
NITROGEN DIOXIDE (NO_2)				
Maximum 1-hour concentration monitored (ppm)		0.08	0.07	0.09
Annual average concentration monitored (ppm)		0.0199	0.0206	0.0258
Number of days exceeding State 1-hour standard	0.18 ppm	0	0	0
CARBON MONOXIDE (CO)				
Maximum 1-hour concentration monitored (ppm)		4	4	7
Maximum 8-hour concentration monitored (ppm)		2.3	2.1	2.0
Number of days exceeding 1-hour standard	20 ppm	0	0	0
Number of days exceeding 8-hour standard	9.0 ppm	0	0	0
SULFUR DIOXIDE (SO_2)				
Maximum 1-hour concentration monitored (ppm)		0.01	0.02	0.01
Maximum 24-hour concentration monitored (ppm)		0.004	0.002	0.003
Number of days exceeding State 1-hour standard	0.25 ppm	0	0	0
Number of days exceeding State 24-hour standard	0.04 ppm	0	0	0
RESPIRABLE PARTICULATE MATTER (PM_{10})				
Maximum 24-hour concentration monitored ($\mu g/m^3$)		109	118	135
Annual average concentration monitored ($\mu g/m^3$)		54.4	54.6	57.4
Number of samples exceeding State standard	50 $\mu g/m^3$	71	66	35
Number of samples exceeding federal standard	150 $\mu g/m^3$	0	0	0
FINE PARTICULATE MATTER ($PM_{2.5}$)				
Maximum 24-hour concentration monitored ($\mu g/m^3$)		55.3	68.6	43.0
Annual average concentration monitored ($\mu g/m^3$)		17.0	18.1	13.4
Number of samples exceeding federal standard	35 $\mu g/m^3$	9	8	4

Source: South Coast Air Quality Management District, "Historical Data by Year – Air Quality," http://www.aqmd.gov/smog/historicaldata.htm. 2011.

[1] *Parts by volume per million of air (ppm), micrograms per cubic meter of air ($\mu g/m^3$), or annual arithmetic mean (aam).*

[2] *The 8-hour federal O_3 standard was revised from 0.08 ppm to 0.075 ppm in March 2008. The statistics shown are based on the 2008 standard of 0.075 ppm.*

4.3.3 REGULATORY FRAMEWORK

Air quality within the Basin is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through Comparative Risk Probabilities legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality within the Basin are discussed below.

4.3.3.1 Federal and State

U.S. Environmental Protection Agency

The U.S. EPA is responsible for enforcing the federal Clean Air Act and the NAAQS. The U.S. EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The U.S. EPA also maintains jurisdiction over emissions sources beyond State waters (outer continental shelf), and establishes various emissions standards for vehicles sold in states other than California. These standards identify levels of air quality for seven criteria pollutants: ozone (O_3), CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The thresholds are considered to be the maximum concentrations of ambient (background) air pollutants determined safe to protect the public health and welfare with an adequate margin of safety.

As part of its enforcement responsibilities, the U.S. EPA requires each state with areas that do not meet the federal standards to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the time frame identified in the SIP. The SCAQMD *2007 Air Quality Management Plan* (2007 AQMP) is the regulatory mechanism by which the SoCAB conforms to U.S. EPA regulations.

The 1990 Clean Air Act Amendments were enacted to better protect the public's health and create more efficient methods for lowering pollutant emissions. The major areas of improvement addressed in the amendments include NAAQS, air basin designations, automobile/heavy-duty engine emissions, and hazardous air pollutants. The U.S. EPA has designated air basins as being in attainment or nonattainment for each of the seven criteria pollutants. Nonattainment air basins for ozone are further ranked (marginal, moderate, serious, severe, or extreme) according to the degree of nonattainment. CARB is required to describe in its SIP how the State will achieve federal standards by specified dates for each air basin that has failed to attain a NAAQS for any criteria pollutant. The SCAQMD has developed the *2007 AQMP*, which demonstrates how the region will attain the air quality standards set forth in the Clean Air Act Amendments.

The extent of mitigation implementation of a given SIP depends on the severity of the air quality condition within the State or a specific air basin. The SoCAB is classified by the U.S. EPA as an extreme nonattainment area for the O_3 standard, as serious nonattainment for PM_{10}, as nonattainment for $PM_{2.5}$, and as attainment/unclassified for the other criteria pollutants. The status of Riverside County with respect to attainment with the NAAQS is summarized in **Table 4.3-3, National Ambient Air Quality Standard Designations – South Coast Air Basin** below.

Table 4.3-3
National Ambient Air Quality Standard Designations
South Coast Air Basin

Pollutant	Designation/Classification
Ozone (O_3)	Nonattainment/Extreme
Carbon Monoxide (CO)	Attainment/Maintenance
Nitrogen Dioxide (NO_2)	Attainment/Maintenance
Sulfur Dioxide (SO_2)	Attainment
Respirable Particulate Matter (PM_{10})	Nonattainment/Serious
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment
Lead (Pb)	Attainment

Source: U.S. Environmental Protection Agency, Region 9: Air Programs, Air Quality Maps," http://www.epa.gov/region9/air/maps/maps_top.html. 2010.

The 1990 Clean Air Act Amendments addressed tailpipe emissions from automobiles, heavy-duty engines, and diesel fuel engines. The amendments established more stringent standards for hydrocarbons, NO_x, and CO emissions in order to reduce the ozone and carbon monoxide levels in heavily populated areas. Under the 1990 Clean Air Act, new fuels were required to be less volatile, contain less sulfur (regarding diesel fuel), and have higher levels of oxygenates (oxygen-containing substances to improve fuel combustion). Due to the lack of a substantial reduction in hazardous emissions under the 1977 Clean Air Act, the 1990 Clean Air Act Amendments listed 189 hazardous air pollutants (HAPs), which are carcinogenic, mutagenic, and/or reproductive toxicants, to be reduced. The 1990 Clean Air Act Amendments regulate major stationary sources and area emissions sources requiring use of Maximum Achievable Control Technology (MACT) to reduce HAP emissions and their associated health impacts.

California Air Resources Board

CARB oversees air quality planning and control throughout California. It is primarily responsible for ensuring implementation of the California Clean Air Act, responding to the federal Clean Air Act planning requirements applicable to the State, and regulating emissions from motor vehicles and

consumer products within the State. In addition, CARB sets health-based air quality standards and control measures for toxic air contaminants (TACs). Much of CARB's research goes toward automobile emissions, as they are primary contributors to air pollution in California. Under the State Clean Air Act, CARB has the authority to establish more stringent standards for vehicles sold in California and for various types of equipment available commercially. It also sets fuel specifications to further reduce vehicular emissions.

The California Clean Air Act established a legal mandate for air basins to achieve the CAAQS by the earliest practical date. These standards apply to the same seven criteria pollutants as the federal Clean Air Act and also include sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. The State standards are generally more stringent than the federal standards.

CARB supervises and supports the regulatory activities of local air quality districts as well as monitors air quality itself. Health and Safety Code Section 39607(e) requires CARB to establish and periodically review area designation criteria. These designation criteria provide the basis for CARB to designate areas of the State as attainment, nonattainment, or unclassified according to State standards. CARB makes area designations for 10 criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, sulfates, lead, hydrogen sulfide, and visibility-reducing particles.[4] The air quality of a region is considered to be in attainment of the State standards if the measured ambient air pollutant levels for O_3, CO, NO_2, PM_{10}, $PM_{2.5}$, SO_2 (1- and 24-hour), and lead are not exceeded, and all other standards are not equaled or exceeded at any time in any consecutive three-year period. The status of Riverside County with respect to attainment with the CAAQS is summarized in **Table 4.3-4, California Ambient Air Quality Standard Designations South Coast Air Basin** below.

[4] California Air Resources Board, "Area Designations (Activities and Maps)," http://www.arb.ca.gov/desig/desig.htm. 2010. According to California Health and Safety Code, Section 39608, "State board, in consultation with the districts, shall identify, pursuant to subdivision (e) of Section 39607, and classify each air basin which is in attainment and each air basin which is in nonattainment for any State ambient air quality standard." Section 39607(e) States that the State shall "establish and periodically review criteria for designating an air basin attainment or nonattainment for any State ambient air quality standard set forth in Section 70200 of Title 17 of the California Code of Regulations. California Code of Regulations, Title 17, Section 70200 does not include vinyl chloride; therefore, CARB does not make area designations for vinyl chloride.

Table 4.3-4
California Ambient Air Quality Standard Designations
South Coast Air Basin

Pollutant	Designation/Classification
Ozone (O_3)	Nonattainment[1]
Carbon Monoxide (CO)	Attainment
Nitrogen Dioxide (NO_2)	Nonattainment
Sulfur Dioxide (SO_2)	Attainment
Respirable Particulate Matter (PM_{10})	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment
Lead (Pb)	Nonattainment
Sulfates (SO_4)	Attainment
Hydrogen Sulfide (H_2S)	Unclassified
Vinyl Chloride	Unclassified
Visibility-Reducing Particles	Unclassified

Source: California Air Resources Board, "Area Designations Maps/State and National," http://www.arb.ca.gov/desig/adm/adm.htm. 2010.

[1] *CARB has not issued area classifications based on the new State 8-hour standard. The previous classification for the 1-hour ozone standard was Severe.*

South Coast Air Quality Management District (SCAQMD)

The management of air quality in the SoCAB is the responsibility of the SCAQMD. This responsibility was given to SCAQMD by the state legislature's adoption of the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Lewis-Presley Air Quality Act, the SCAQMD is responsible for bringing air quality in the areas under its jurisdiction into conformity with federal and state air quality standards. Specifically, the SCAQMD is responsible for monitoring ambient air pollutant levels throughout the Basin and for developing and implementing attainment strategies to ensure that future emissions will be within federal and state standards.

The SCAQMD primarily regulates emissions from stationary sources such as manufacturing and power generation. Mobile sources such as buses, automotive vehicles, trains, and airplanes are largely out of the SCAQMD's jurisdiction and are up to CARB and the U.S. EPA to regulate. In order to achieve air quality standards, the SCAQMD adopts an Air Quality Management Plan that serves as a guideline to bring pollutant concentrations into attainment with federal and state standards. The SCAQMD determines if certain rules and control measures are appropriate for their specific region according to technical feasibility, cost effectiveness, and the severity of nonattainment. Once the SCAQMD has adopted the

proper rules, control measures, and permit programs, it is responsible for implementing and enforcing compliance with those rules, control measures, and programs.

SCAQMD Air Quality Analysis Guidance Handbook

In 1993, the SCAQMD prepared its *California Environmental Quality Act (CEQA) Air Quality Handbook* to assist local government agencies and consultants in preparing environmental documents for projects subject to CEQA. The SCAQMD is in the process of developing an *Air Quality Analysis Guidance Handbook* (Handbook) to replace the *CEQA Air Quality Handbook*.[5] The documents describe the criteria that SCAQMD uses when reviewing and commenting on the adequacy of environmental documents. The Handbook recommends thresholds of significance in order to determine if a project will have a significant adverse environmental impact. Other important contents are methodologies for estimating project emissions and mitigation measures that can be used to avoid or reduce air quality impacts. Although the Governing Board of the SCAQMD has adopted the *CEQA Air Quality Handbook*, and is in the process of developing a replacement document, the handbook does not, nor is it intended to, supersede a local jurisdiction's CEQA procedures.[6]

While the *Air Quality Analysis Guidance Handbook* is being developed, supplemental information has been adopted by the SCAQMD. This includes revisions to the air quality significance thresholds and a new procedure referred to as "localized significance thresholds," which has been added as a significance threshold under the *Final Localized Significance Threshold Methodology*.[7] The SCAQMD has recommended that lead agencies not use the screening tables in the *CEQA Air Quality Handbook's* Chapter 6 because the tables were derived using an obsolete version of CARB's mobile source emission factor inventory and are also based on outdated trip generation rates from a prior edition of the Institute of Transportation Engineer's Trip Generation Handbook.[8] The SCAQMD has also recommended that lead agencies not use the on-road mobile source emission factors in Table A9-5-J1 through A9-5-L as they are obsolete, and instead recommends using on-road mobile source emission factors approved by CARB.[9] The outdated and obsolete information were not used in this analysis. The applicable portions of the *CEQA Air Quality*

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5 South Coast Air Quality Management District, "Air Quality Analysis Guidance Handbook," http://www.aqmd.gov/ CEQA/hdbk.html. 2009.

6 South Coast Air Quality Management District, "Frequently Asked CEQA Questions," http://www.aqmd.gov/ ceqa/faq.html. 2007.

7 South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, (2008).

8 South Coast Air Quality Management District, "CEQA Air Quality Handbook," (1993), http://www.aqmd.gov/ ceqa/oldhdbk.html. 2007.

9 South Coast Air Quality Management District, "EMFAC 2007 (v2.3) Emission Factors (On-Road)," http://www.aqmd.gov/CEQA/handbook/onroad/onroad.html. 2008.

Handbook, the *Air Quality Analysis Guidance Handbook* supplemental information, and other revised methodologies were used in preparing the air quality analysis in this section.

SCAQMD Air Quality Management Plan

The SCAQMD is required to produce Air Quality Management Plans describing how air quality will be improved. The California Clean Air Act requires that these plans be updated triennially in order to incorporate the most recent available technical information. In addition, the U.S. EPA requires establishment of transportation conformity budgets based on the most recent planning assumptions (i.e., within the last five years). Plan updates are necessary to ensure continued progress toward attainment of the NAAQS and to avoid a transportation conformity lapse and associated federal funding losses. A multi-level partnership of governmental agencies at the federal, State, regional, and local levels implement the programs contained in these plans. Agencies involved include the U.S. EPA, CARB, local governments, Southern California Association of Governments (SCAG), and the SCAQMD.

The SCAQMD is the agency responsible for preparing the AQMP for the SoCAB. Since 1979, a number of AQMPs have been prepared. The SCAQMD adopted the currently applicable *2007 AQMP* on June 1, 2007. CARB approved the *2007 AQMP* as the comprehensive State Implementation Plan component for the SoCAB on September 27, 2007. The purpose of the *2007 AQMP* for the SoCAB (and those portions of the Salton Sea Air Basin under the SCAQMD's jurisdiction) is to set forth a comprehensive program that will lead these areas into compliance with federal and State air quality planning requirements for ozone and $PM_{2.5}$. In addition, as part of the *2007 AQMP*, the SCAQMD requested U.S. EPA's approval of a "bump-up" to the "extreme" nonattainment classification of ozone for the SoCAB. The extreme nonattainment classification would extend the ozone attainment date from 2021 to 2024 and allow for the attainment demonstration to rely on emission reductions from measures that anticipate the development of new technologies or improvement of existing control technologies. The U.S. EPA approved the extreme nonattainment request on April 15, 2010.

The *2007 AQMP* focuses on attainment strategies for the ozone and $PM_{2.5}$ standards through stricter control of sulfur oxides and directly emitted $PM_{2.5}$, NO_X, and volatile organic compounds (VOCs). Although $PM_{2.5}$ plans for nonattainment areas were due in April 2008, the SCAQMD has integrated $PM_{2.5}$ and ozone reduction control measures and strategies in the *2007 AQMP*. The need to commence $PM_{2.5}$ control strategies before April 2008 was due to the attainment date for $PM_{2.5}$ (2015) being much earlier than that for ozone (2024 for the extreme designation). Control measures and strategies for $PM_{2.5}$ will also help control ozone generation in the region because $PM_{2.5}$ and ozone share similar precursors (e.g., NO_X). In addition, the AQMP focuses on reducing VOC emissions, which have not been reduced at the same

rate as NO_x emissions in the past. Hence, the SoCAB has not achieved the reductions in ozone as were expected in previous plans.

SCAQMD Rules and Regulations

The SCAQMD is responsible for limiting the amount of emissions that can be generated throughout the SoCAB by various stationary, area, and mobile sources. Specific rules and regulations adopted by the SCAQMD Governing Board limit the emissions that can be generated by various uses/activities and that identify specific pollution reduction measures, which must be implemented in association with various uses and activities. These rules regulate the emissions of the federal and state criteria pollutants as well as toxic air contaminants and acutely hazardous materials. The rules are also subject to ongoing refinement by SCAQMD.

Among the SCAQMD rules applicable to the proposed project are Rule 403 (Fugitive Dust), Rule 1113 (Architectural Coatings), and Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities). Rule 403 requires the use of stringent best available control measures to minimize PM_{10} emissions during grading and construction activities. Rule 1113 requires reductions in the VOC content of coatings, with a substantial reduction in the VOC content limit for flat coatings in July 2008. Compliance with SCAQMD Rule 1403 requires that the owner or operator of any demolition or renovation activity has an asbestos survey performed prior to demolition and provides notification to the SCAQMD prior to commencing demolition activities. Additional details regarding these and other potentially applicable rules are presented below.

- **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.

- **Rule 403 (Fugitive Dust)** – This rule requires fugitive dust generators to implement Best Available Control Measures for all sources, and all forms of visible particulate matter are prohibited from crossing any property line. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust (see also Rule 1186).

- **Rule 1113 (Architectural Coatings)** – This rule requires manufacturers, distributors, and end-users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

- **Rule 1121 (Control of Nitrogen Oxides from Residential Type, Natural Gas-Fired Water Heaters)** - This rule prescribes NO_x emission limits for natural gas-fired water heaters with heat input rates less than 75,000 Btu per hour. It applies to manufacturers, distributors, retailers, and installers of natural

gas-fired water heaters. In lieu of meeting these NO_X limits, this rule allows emission mitigation fees to be collected from water heater manufacturers to fund stationary and mobile source emission reduction projects targeted at offsetting NO_X emissions from water heaters that do not meet Rule 1121 emission standards.

- **Rule 1146.2 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters)** – This rule requires manufacturers, distributors, retailers, refurbishers, installers, and operators of new and existing units to reduce NO_X emissions from natural gas-fired water heaters, boilers, and process heaters as defined in this rule.

- **Rule 1186 (PM_{10} Emissions from Paved and Unpaved Roads, and Livestock Operations)** – This rule applies to owners and operators of paved and unpaved roads and livestock operations. The rule is intended to reduce PM_{10} emissions by requiring the clean-up of material deposited onto paved roads, use of certified street sweeping equipment, and treatment of high-use unpaved roads (see also Rule 403).

- **Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities)** – This rule requires owners and operators of any demolition or renovation activity and the associated disturbance of asbestos-containing materials, any asbestos storage facility, or any active waste disposal site to implement work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials.

Stationary emissions sources subject to these rules are regulated through SCAQMD's permitting process. Through this permitting process, SCAQMD also monitors the amount of stationary emissions being generated and uses this information in developing AQMPs. The proposed project would be subject to SCAQMD rules and regulations to reduce specific emissions and mitigate potential air quality impacts.

Southern California Association of Governments

SCAG is a council of governments for the Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. As a regional planning agency, SCAG serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG also serves as the regional clearinghouse for projects requiring environmental documentation under federal and State law. In this role, SCAG reviews projects to analyze their impacts on SCAG's regional planning efforts.

Although SCAG is not an air quality management agency, it is responsible for several air quality planning issues. Specifically, as the designated Metropolitan Planning Organization for the Southern California region, it is responsible, pursuant to Section 176(c) of the 1990 amendments to the Clean Air Act, for providing current population, employment, travel, and congestion projections for regional air quality planning efforts. With respect to air quality, SCAG has prepared the *2004 Regional Transportation*

Plan[10] and the *2006 Regional Transportation Improvement Program*[11] for the SCAG region, which forms the basis for the transportation components of the 2007 AQMP and are utilized in the preparation of air quality forecasts and the consistency analysis that is included in the 2007 AQMP.

Local Governments

Local governments have the authority and responsibility to reduce air pollution through their police power and land use decision-making authority. Specifically, local governments are responsible for the mitigation of emissions resulting from land use decisions and for the implementation of transportation control measures as outlined in the AQMP. The AQMP assigns local governments certain responsibilities to assist the Basin in meeting air quality goals and policies. In general, a first step toward implementation of a local government's responsibility is accomplished by identifying air quality goals, policies, and implementation measures in its general plan. Through capital improvement programs, local governments can fund infrastructure that contributes to improved air quality, by requiring such improvements as bus turnouts, energy-efficient streetlights and synchronized traffic signals. In accordance with CEQA requirements and the CEQA review process, local governments assess air quality impacts, require mitigation of potential air quality impacts by conditioning discretionary permits, and monitoring and enforcement of such mitigation.

4.3.4 IMPACTS AND MITIGATION MEASURES

4.3.4.1 Significance Criteria

The impacts related to air quality from the proposed project would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors);

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10 Southern California Association of Governments, "Regional Transportation Plan," http://www.scag.ca.gov/rtp2004/2004/FinalPlan.htm. 2004.

11 Southern California Association of Governments, "Regional Transportation Improvement Program," http://www.scag.ca.gov/RTIP/rtip2006/adopted.htm. 2006.

- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

The *State CEQA Guidelines* (Section 15064.7) provide that, when available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make determinations of significance. The potential air quality impacts of the proposed project are, therefore, evaluated according to thresholds developed by the SCAQMD in the *CEQA Air Quality Handbook*, *Air Quality Analysis Guidance Handbook*, and subsequent guidance, discussed below. These thresholds generally incorporate the checklist questions contained in Appendix G of the *State CEQA Guidelines*.

Construction Emissions

Impacts related to construction emissions associated with the proposed project would be considered significant if: construction emissions would exceed the SCAQMD construction emissions thresholds specified in **Table 4.3-5, SCAQMD Daily Construction Emission Thresholds.**

Table 4.3-5
SCAQMD Daily Construction Emissions Thresholds

	Pollutant (pounds per day)					
Significance Threshold	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Construction	75	100	550	150	150	55

Source: South Coast Air Quality Management District, Air Quality Significance Thresholds*, (2009).*

Operational Emissions

The SCAQMD has recommended two sets of air pollution thresholds to assist lead agencies in determining whether or not the impact from operational phase of a project's development would be significant. These are defined below as Primary and Secondary Thresholds. The SCAQMD recommends that a project's impacts be considered significant if either threshold is exceeded.

Primary Thresholds

Impacts related to operational emissions associated with the proposed project would be considered significant if its operational emissions exceed the limits specified in **Table 4.3-6, SCAQMD Daily Operational Emission Thresholds**.

Table 4.3-6
SCAQMD Daily Operational Emission Thresholds

	Pollutant (pounds per day)					
Significance Threshold	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Operation	55	55	550	150	150	55

Source: South Coast Air Quality Management District, Air Quality Significance Thresholds*, (2009).*

Secondary Thresholds

The SCAQMD also states that a project would have a significant air quality impact if operation of the project would exceed the following SCAQMD secondary operational thresholds:

- The project could interfere with the attainment of the federal or State ambient air quality standards by either violating or contributing to an existing or projected air quality violation;
- The project could result in population increases within an area, which would be in excess of that projected by SCAG in the AQMP, or increase the population in an area where SCAG has not projected that growth for the project's buildout year;
- The project could generate vehicle trips that cause a CO hotspot or project could be occupied by sensitive receptors that are exposed to a CO hotspot;
- The project will have the potential to create, or be subjected to, an objectionable odor that could impact sensitive receptors; or
- The project will have hazardous materials on site and could result in an accidental release of toxic air emissions or acutely hazardous materials posing a threat to public health and safety.[12]

Toxic Air Contaminants

The SCAQMD states that a project would have a significant air quality impact if:

- The project could emit a toxic air contaminant regulated by SCAQMD rules or that is on a federal or State air toxic list;
- The project could be occupied by sensitive receptors within one-quarter mile of an existing facility that emits air toxics identified in SCAQMD Rule 1401; or

12 South Coast Air Quality Management District, *Air Quality Significance Thresholds*.

- The project could emit carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of 10 in 1 million.[13]

Cumulative

According to the SCAQMD, projects that individually exceed the construction and/or operational mass-based emissions thresholds would also result in a cumulatively considerable contribution to air quality impacts and would be considered cumulatively significant. If a project is not within the emission thresholds above, the SCAQMD *CEQA Air Quality Handbook* identifies three possible methods to determine the cumulative significance of land use projects.[14] The SCAQMD's methods are based on performance standards and emission reduction targets necessary to attain the federal and state air quality standards identified in the 2007 AQMP. However, one method is no longer recommended and supported by the SCAQMD and another method is not applicable as the SCAQMD repealed the underlying regulation (Regulation XV) after the *CEQA Air Quality Handbook* was published. Therefore, the only viable SCAQMD method is based on whether the rate of growth in average daily trips associated with the project exceeds the rate of growth in population.

4.3.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The Initial Study deferred analysis of the project's air quality impacts to the EIR. Therefore, all of the CEQA checklist items listed above as significance criteria are addressed in the following analysis.

4.3.4.3 Methodology

The UCR 2005 LRDP as amended by the proposed Amendment 2 is an envelope for development of the UCR campus, which if fully implemented, would ultimately support (1) a daytime population of 41,393 faculty, staff, patients, visitors, and students, and (2) associated facilities totaling nearly 14.9 million square feet of building space needed to support the campus. The development that would be enabled by the approval of the proposed Amendment 2 is evaluated in this EIR for potential impacts related to air quality, such as increases in construction or operational emissions, release of toxic contaminants, or production of odorous emissions. While not a requirement of CEQA, the analysis of potential adverse air quality impacts in this EIR incorporates a conservative approach. This approach entails the premise that whenever the analysis requires that assumptions be made, the assumptions that result in the greatest reasonable adverse impacts are typically chosen. This method ensures that no potential effects of the proposed project are understated.

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13 South Coast Air Quality Management District, *Air Quality Significance Thresholds*.

14 South Coast Air Quality Management District, *CEQA Air Quality Handbook*, (1993) 9–12; written communication with Steve Smith, South Coast Air Quality Management District, November 20, 2003.

The methodology used to evaluate the air quality impacts associated with construction and operation of the proposed project is based on the SCAQMD's CEQA Guide,[15] the URBEMIS2007 Environmental Management Software,[16] and information provided in the *Software User's Guide [for] URBEMIS2007 for Windows*.[17] The emissions estimates are based on typical construction phasing schedules and equipment activity levels. Some elements of this analysis are based on data provided in other sections of this EIR; for example, trip generation rates and a CO hotspots analysis are based on the traffic impact analysis prepared for this project. The traffic impact analysis is summarized in **Section 4.14**, **Transportation and Traffic,** and provided in **Appendix 4.14**. Emission calculations and air quality modeling conducted for the project are provided in **Appendix 4.3**.

Construction-related emissions can be distinguished as either on site or off site. On-site emissions generated during construction principally consist of exhaust emissions (VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$) from the operation of heavy-duty construction equipment, fugitive dust (PM_{10} and $PM_{2.5}$) from disturbed soil, and VOC emissions from asphalt paving and architectural coating. Off-site emissions during the construction phase normally consist of exhaust emissions and entrained paved road dust (PM_{10} and $PM_{2.5}$) from construction worker commute trips, material delivery trips, and haul truck material removal trips to and from the construction site.

Air pollutants associated with operations would be generated primarily by two categories of pollution sources: stationary and mobile. Stationary sources consist of "point sources," which have one or more fixed emission sources at a single facility, and "area sources," which are widely distributed and produce many small emissions. Stationary sources at the project site would include central plant boilers and emergency generators located in several places on the campus. When viewed individually, an area source may have an insignificant impact on air quality; however, if viewed collectively, area sources could have a significant impact on air quality. Examples of area sources include residential water heaters, painting operations, landscape maintenance equipment, and consumer products, such as barbecue lighter fluid or hair spray. "Mobile sources" refers to operational and evaporative emissions from motor vehicles.

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15 South Coast Air Quality Management District, "CEQA Air Quality Handbook," http://www.aqmd.gov/ceqa/hdbk.html. 1993.

16 Rimpo and Associates, "URBEMIS2007 for Windows," http://www.urbemis.com. 2008.

17 Ibid.

4.3.4.4 Project Impacts and Mitigation Measures

Impact 4.3-1 **Construction projects under the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in construction emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation. The impact would be significant.**

The 2005 LRDP as amended by the proposed Amendment 2 is a land use plan that would guide the projected physical development of the campus over the next 9 years. It is however not a development program and details of specific building projects that would be built on the campus over the next 9 years are not available. However, development of the new facilities on the campus under the amended 2005 LRDP would require site preparation (i.e., demolition and grading); pavement and asphalt installation; and building construction and would result in construction emissions. To develop an estimate of the maximum possible construction emissions that could result from the projected new building space (including new development projects and demolition necessary to accommodate new development) under the amended 2005 LRDP, it was assumed that there would be ongoing construction on the campus between 2012 and 2020, and that all the new building space under the amended 2005 LRDP would be completely constructed by 2020, although, in reality, development could take longer and buildout may not be completed until several years later. It was also assumed that the entire development envisioned in the amended 2005 LRDP would actually be completed, though this is contingent on financing and other factors and may not be achieved. During the 2012 through 2020 period, construction emissions of criteria pollutants and diesel particulate matter (DPM) would be generated by heavy-duty construction equipment, on-road trucks for material deliveries, and construction worker vehicles. VOC emissions would occur as a result of asphalt paving and architectural coatings. In addition, fugitive dust would be generated by grading and related activities.

Because of the construction time frame and the normal day-to-day variability in construction activities, it is difficult, if not impossible, to precisely quantify the emissions associated with each construction sub-phase. In order to estimate the construction emissions using URBEMIS2007, a conservative approach was taken in which construction of the campus facilities was assumed to occur over three non-overlapping phases with an overall time schedule from early 2012 to late 2020, with each phase lasting three years. Each phase was assumed to comprise the development of one-third of the total building program envisioned under the amended 2005 LRDP. Each phase was assumed to consist of the following four construction sub phases:

Grading and Excavation: The project site would require grading and excavation, for which URBEMIS2007 default assumptions were used to estimate emissions. The total acreage graded per

sub-phase is 127 acres, with a maximum of 32 acres disturbed at any one point over the grading period. The estimate is based on grading activities including both mass and fine grading occurring over a 12-month period, with mass grading over the first six months and fine grading the last six months.

Building Construction: Project implementation is assumed to involve the construction of approximately 8.4 million square feet of total development. This figure represents the amount of total development encompassed by the amended 2005 LRDP minus the amount already completed in 2009. Building construction for each phase would occur over approximately 32 months, beginning four months after mass grading was begun and overlapping with the last nine months of grading.

Architectural Coating: Architectural coatings were assumed to adhere to SCAQMD requirements for VOC content. For nonresidential coatings (both interior and exterior), this is 250 grams VOC per liter of coating. For residential coatings, the rule is 50 grams VOC per liter of coating for interiors and 100 grams VOC per liter of coating for exteriors. Architectural coating for each phase was assumed to occur over 12 months overlapping with the last 12 months of the building construction sub phase.

Asphalt Paving: URBEMIS2007 default assumptions for equipment and materials were used to estimate paving emissions. Paving was conservatively assumed to cover 127 acres per sub phase. Asphalt paving for each phase was assumed to occur over four months overlapping with the last four months of the building construction sub phase.

Based on the schedules and assumptions described above and URBEMIS2007 default assumptions, the URBEMIS2007model was used to estimate annual construction emissions of criteria pollutants from 2012 to 2020, which are shown in **Table 4.3-7, Estimated Unmitigated Construction Emissions**. Emissions during the earlier years are higher due to the fact that construction equipment would be subject to increasingly more stringent emission standards and that older equipment would be replaced with newer, less-polluting equipment. The URBEMIS2007 model partially accounts for such changes (the model does not take into account regulatory changes to emission standards that have been adopted since the model was publicly released).

As shown in **Table 4.3-7**, the SCAQMD significance threshold for CO and SO_X would not be exceeded during construction. However, VOC, NOx, PM_{10} and $PM_{2.5}$ emissions are all above significance thresholds. Therefore, conservatively it is concluded that construction emissions would result in a significant impact on air quality.

Table 4.3-7
Estimated Unmitigated Construction Emissions

	Emissions in Pounds per Day					
Construction Year	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2012	18.87	122.41	233.12	0.29	643.62	139.07
2013	9.62	48.64	182.30	0.29	3.98	2.46
2014	239.97	62.28	184.39	0.30	5.26	4.06
2015	15.05	94.41	192.20	0.29	642.15	137.72
2016	7.34	35.79	149.12	0.29	3.36	2.34
2017	237.41	47.22	152.73	0.30	4.37	3.24
2018	11.95	71.54	161.17	0.29	640.90	136.57
2019	5.67	26.89	122.87	0.29	2.90	1.91
2020	234.53	36.56	127.44	0.30	3.71	2.63
Maximum Emissions in Any Year	239.97	122.41	233.12	0.30	643.62	139.07
SCAQMD Threshold:	75	100	550	150	150	55
Exceeds Threshold?	**YES**	**YES**	**NO**	**NO**	**YES**	**YES**

*Source: Impact Sciences, Inc. Emissions calculations are provided in **Appendix 4.3**.*
Totals in the table may not appear to add exactly due to rounding in the computer model calculations.

During the planning horizon for the 2005 LRDP, the Campus would continue to implement as applicable the following existing campus Programs and Practices (PP) relevant to air quality during construction and are assumed as part of the proposed project:

PP 4.3-2(a) Construction contract specifications shall include the following:

(i) Compliance with all SCAQMD rules and regulations

(ii) Maintenance programs to assure vehicles remain in good operating condition

(iii) Avoid unnecessary idling of construction vehicles and equipment

(iv) Use of alternative fuel construction vehicles

(v) Provision of electrical power to the site, to eliminate the need for on-site generators

PP 4.3-2(b) The Campus shall continue to implement dust control measures consistent with SCAQMD Rule 403—Fugitive Dust during the construction phases of new project development. The following actions are currently recommended to implement Rule 403 and have been quantified by the SCAQMD as being able to reduce dust generation between 30 and 85 percent depending on the source of the dust generation. The Campus shall implement these measures as necessary to reduce fugitive dust. Individual measures shall be specified in construction documents and require implementation by construction contractor:

(i) Apply water and/or approved non-toxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas that have been inactive for 10 or more days).

(ii) Replace ground cover in disturbed areas as quickly as possible.

(iii) Enclose, cover, water twice daily, or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content.

(iv) Water active grading sites at least twice daily.

(v) Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period.

(vi) All trucks hauling dirt, sand, soil, or other loose materials shall be covered or maintain at least 2 feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code.

(vii) Sweep streets at the end of the day if visible soil material is carried over to adjacent roads.

(viii) Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip.

(ix) Apply water three times daily or chemical soil stabilizers according to manufacturers' specifications to all unpaved parking or staging areas or unpaved road surfaces.

(x) Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads.

Mitigation Measures: In addition, the following mitigation measures that are recommended by the SCAQMD will be implemented to address this impact. In the event that the SCAQMD revises its recommendations with respect to these measures, the Campus will accordingly update or replace these measures with other SCAQMD recommended measures.

MM 4.3-1a: For each construction project on the campus, the project contractor will implement Programs and Practices 4.3-2(a) and 4.3-2(b).

In addition, the following PM10 and PM2.5 control measure shall be implemented for each construction project:

- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the District shall also be visible to ensure compliance.

MM 4.3-1b: For each construction project on the campus, the University shall require that the project include a construction emissions control plan that includes a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used for an aggregate of 40 or more hours during any portion of the construction project. During construction activity, the contractor shall utilize CARB certified equipment or better for all on-site construction equipment according to the following schedule:

- January 1, 2011 to December 31, 2011: All off-road diesel-powered construction equipment greater than 50 hp shall meet Tier 2 off-road emissions standards. In addition, all construction equipment shall be outfitted with the BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

- January 1, 2012 to December 31, 2014: All off-road diesel-powered construction equipment greater than 50 hp shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

- Post January 1, 2015: All off-road diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

- A copy of each unit's certified specification, BACT documentation and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit or equipment.

- Encourage construction contractors to apply for AQMD 'SOON" funds. Incentives could be provided for those construction contractors who apply for AQMD "SOON" funds. The "SOON" program provides funds to accelerate cleanup of off-road diesel vehicles, such as heavy-duty construction equipment. More information on this program can be found at the following website: http://www.aqmd.gov/ tao/implementation/ soonprogram.htm

The contractor shall also implement the following measures during construction:

- Prohibit vehicle and engine idling in excess of 5 minutes and ensure that all off-road equipment is compliant with the California Air Resources Board's (CARB) in-use off-road diesel vehicle regulation and SCAQMD Rule 2449.
- Configure construction parking to minimize traffic interference.
- Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow.
- Provide dedicated turn lanes for movement of construction trucks and equipment on- and off site.
- Schedule construction activities that affect traffic flow on the arterial system to off-peak hour to the extent practicable.
- Improve traffic flow by signal synchronization, and ensure that all vehicles and equipment will be properly tuned and maintained according to manufacturers' specifications.
- Use diesel-powered construction vehicles and equipment that operate on low-NOx fuel where possible.
- Reroute construction trucks away from congested streets or sensitive receptor areas.
- Maintain and tune all vehicles and equipment according to manufacturers' specifications.

MM 4.3-1c: To minimize VOC emissions from the painting/finishing phase, for each construction project on the campus, the project contractor will implement the following VOC control measures:

- Construct or build with materials that do not require painting, or use pre-painted construction materials.
- If appropriate materials are not available or are cost-prohibitive, use low VOC-content materials more stringent than required under SCAQMD Rule 113.

Significance after Mitigation: Table 4.3-8, Estimated Mitigated Construction Emissions, shows the construction emissions with the implementation of existing campus PPs and SCAQMD recommended mitigation measures (as summarized in **Mitigation Measures 4.3-1a, -1b** and **-1c**).

Table 4.3-8
Estimated Mitigated Construction Emissions

	Emissions in Pounds per Day					
Construction Year	**VOC**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
2012	18.87	119.35	233.12	0.29	150.62	35.25
2013	9.62	45.79	182.30	0.29	2.90	1.92
2014	217.23	57.29	184.39	0.30	3.18	1.68
2015	15.05	91.98	192.20	0.29	149.50	34.22
2016	7.34	33.56	149.12	0.29	2.62	1.65
2017	214.67	43.24	152.73	0.30	2.81	1.81
2018	11.95	69.67	161.17	0.29	148.55	33.34
2019	5.67	25.18	122.87	0.29	2.41	1.46
2020	211.87	34.98	127.44	0.30	3.28	2.24
Maximum Emissions in Any Year	217.23	119.35	233.12	0.30	150.62	35.25
SCAQMD Threshold:	75	100	550	150	150	55
Exceeds Threshold?	**YES**	**YES**	**NO**	**NO**	**YES**	**NO**

*Source: Impact Sciences, Inc. Emissions calculations are provided in **Appendix 4.3**.*
Totals in the table may not appear to add exactly due to rounding in the computer model calculations.

As shown in **Table 4.3-8**, while emissions would be reduced by the implementation of existing campus Programs and Practices and the mitigation measures noted above, estimated emissions of VOC, NOx and PM10 remain above significance thresholds. Therefore, conservatively it is concluded that construction-related VOC, NOx, and PM_{10} emissions would result in a significant impact on air quality even after mitigation. The impact from construction activities would be significant and unavoidable.

Impact 4.3-2 **Operation of the campus under the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would result in operational emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. The impact would be significant.**

The 2005 LRDP as amended by the proposed Amendment 2 would facilitate the development of the School of Medicine as well as additional academic buildings, support facilities, and student housing on the campus, which at full development would accommodate approximately 41,393 faculty, staff, and

students in over 14.9 million square feet of building space. For the purposes of analyzing air quality impacts in this EIR, it was assumed that total development would be achieved by 2020. The existing development at UCR is approximately 6.5 million square feet. Approximately 8.4 million square feet of building space would be constructed under the amended 2005 LRDP.[18]With respect to the increase in campus population under the amended 2005 LRDP, that number was estimated by deducting the existing campus population (2011 – 27,966) from the total projected for 2020 (41,393). This increment of population was estimated to be 13,427 faculty, staff, students and others, such as visitors.

Operational emissions would be generated by mobile sources, area sources, and stationary sources as a result of normal day-to-day activity on the campus. Mobile source emissions would be generated by motor vehicles traveling to and from the campus. Area emissions would be generated by the consumption of natural gas for space and water heating devices, the operation of landscape maintenance equipment, the use of consumer products, and the application of architectural coatings. Stationary source emissions would be generated from point sources located on the campus, including boilers, a gas turbine, cooling towers, and emergency generators. URBEMIS2007 was used to quantify mobile source and area source emissions. Stationary source emissions were calculated based on operating data provided by the Campus and emission factors from the U.S. EPA's *AP-42 Compilation of Air Pollutant Emission Factors* and other SCAQMD emission factors, as appropriate.

Mobile source emissions are primarily a function of trip generation rates and distances traveled. For the purposes of the URBEMIS2007 model, the university/college land use type was used to model operational (mobile) source emissions. This land use type requires that the user specify the population associated with the project, rather than the square footage. The proposed project's trip generation rate was estimated based on 13,427 persons. The URBEMIS2007 default travel distances were used in the analysis.

Area source emissions were modeled separately from mobile source emissions. This is because the area source emissions are more dependent on building sizes and not population. For the purposes of the URBEMIS2007 model, the university/college land use type was used to model area source emissions. As noted above, URBEMIS2007 requires that the user specify the population associated with the project, rather than the square footage for the university/college land use type. The URBEMIS2007 model assumes a conversion factor of 92 square feet per student for the university/college land use type. Therefore, the square footage associated with the proposed project was converted to a corresponding population value based on the conversion factor of 92 square feet per student.

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18 The 8.4 million square feet of building space to be constructed under the amended 2005 LRDP = Amount remaining under 2005 LRDP (11.8 million square feet – 6.5 million square feet) + Amount added by the 2005 LRDP Amendment 2 (3.1 million square feet).

At a minimum, future campus facilities developed under the amended 2005 LRDP would comply with the energy efficiency requirements of the Title 24 (2008) Building Standards Code. In actuality, the proposed 2005 LRDP would be much more efficient since the UC Policy on Sustainable Practices requires all non-acute care facilities to achieve at least a 20 percent reduction from Title 24 (2008) Building Standards Code. Therefore, a 20 percent reduction to natural gas emissions was applied in URBEMIS2007.

Table 4.3-9, **Estimated Unmitigated Operational Emissions** shows the incremental operational emissions from the growth of the campus under the amended 2005 LRDP.

Table 4.3-9
Estimated Unmitigated Operational Emissions

	Emissions in Pounds Per Day					
Emissions Source	**VOC**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Summer Emissions						
Proposed Project						
Operational (Mobile) Sources	391.00	452.44	4,086.29	8.14	1,310.24	256.54
Area Sources	53.44	64.30	55.54	0.00	0.13	0.12
Summer Emissions Total	444.44	516.74	4,150.59	8.14	1,310.37	256.66
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**
Winter Emissions						
Proposed Project						
Operational (Mobile) Sources	410.27	540.61	3,930.78	6.88	1,310.24	256.54
Area Sources	53.32	64.28	53.99	0.00	0.12	0.11
Winter Emissions Total	463.59	604.89	3,984.77	6.88	1,310.36	256.65
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**

*Source: Impact Sciences, Inc. Emissions calculations are provided in **Appendix 4.3**.*
Totals in table may not appear to add exactly due to rounding in the computer model calculations.

As shown in **Table 4.3-9**, operation of new facilities on the campus would result in emissions over the SCAQMD significance thresholds for all pollutants except SOx.

During the planning horizon for the 2005 LRDP Amendment 2, the Campus would continue to implement as applicable the following existing campus Program and Practice (PP) relevant to air quality during operation and is assumed as part of the proposed project:

PP 4.3-1 The Campus shall continue to implement a Transportation Demand Management program that meets or exceeds all trip reduction and AVR requirements of the SCAQMD. The TDM program may be subject to modification as new technologies are developed or alternate program elements are found to be more effective.

(This is identical to Transportation and Traffic PP 4.14-1.)

Mitigation Measures: In addition, the mitigation measure for operational emissions included in the 2005 LRDP EIR will continue to be implemented to address this impact. This measure is reproduced below along with MM 4.3-2b.

MM 4.3-2a: The Campus will:

- Implement a subsidized vanpool program.
- Implement staggered or compressed work schedules to reduce vehicular traffic.
- Use alternative fuel shuttle buses to reduce intra-campus vehicle trips.
- Provide shuttle service to major off-campus activity centers and Metrolink stations.
- Aggressive expansion of the campus TDM program to achieve an AVR of 1.5.
- Expand transit subsidies to encourage use of public transit.
- Implement incentives for telecommuting.
- Convert campus fleet to low-emission, alternative fuel and electric vehicles over time.
- Implement solar or low-emission water heaters.
- Implement an educational program for faculty and staff and distribute information to students and visitors about air pollution problems and solutions.

MM 4.3-2b: UCR shall continue to participate in greenhouse gas (GHG) reduction programs such as the American College and University Presidents' Climate Commitment (ACUPCC) and shall adhere to the UC Policy on Sustainable Practices. The measures adopted by UCR are presented in **Tables 4.16-9** and **4.16-10** in **Section 4.16 Greenhouse Gas Emissions**. While these measures are typically targeted at GHG emissions, many act to reduce energy consumption and vehicle use on campus and would consequently also reduce air pollutant emissions from both area and mobile sources. In accordance with the ACUPCC and the UC Policy on Sustainable Practices and through implementation of its Climate Action Plan, UCR shall commit to reducing GHG emissions to 1990 levels by 2020, which

would require significant reductions (on the order of 70 percent) from these sources in terms of GHG and therefore reductions in other air pollutants as well.

Significance after Mitigation: The specific reductions in air pollutant emissions that would result from the implementation of an existing campus Program and Practice and these measures cannot be calculated. Therefore, while impacts would be substantially reduced after mitigation, this EIR concludes that the impact from operational emissions would be significant and unavoidable.

Impact 4.3-3 **Implementation of the proposed 2005 LRDP Amendment 2 would not expose sensitive receptors to substantial concentrations of carbon monoxide. The impact would be less than significant.**

Motor vehicles are a primary source of pollutants within the project vicinity. Traffic congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed State and/or federal standards are termed CO "hotspots." Such hot spots are defined as locations where the ambient CO concentrations exceed the State or federal ambient air quality standards. Emissions of CO are produced in greatest quantities from vehicle combustion and are usually concentrated at or near ground level because it does not readily disperse into the atmosphere. As a result, potential air quality impacts to sensitive receptors are assessed through an analysis of localized CO concentrations. Areas of vehicle congestion have the potential to create CO hotspots that exceed the state ambient air quality 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm. The federal levels are less stringent than the State standards and are based on 1- and 8-hour standards of 35 and 9 ppm, respectively. Thus, an exceedance condition would occur based on the State standards prior to exceedance of the federal standard.

The proposed project was evaluated to determine if it would cause or contribute to the formation of CO hotspots utilizing a simplified CALINE4 screening model developed by the Bay Area Air Quality Management District (BAAQMD). The simplified model is intended as a screening analysis that identifies a potential CO hotspot. If a hotspot is identified, the complete CALINE4 model is then utilized to determine precisely the CO concentrations predicted at the intersections in question. This methodology assumes worst-case conditions (i.e., wind direction is parallel to the primary roadway and 90 degrees to the secondary road, wind speed of less than 1 meter per second and extreme atmospheric stability) and provides a screening of maximum, worst-case, CO concentrations. This method is acceptable to the SCAQMD as long as it is used in accordance with BAAQMD policy.[19] The model is utilized to predict future CO concentrations 0 feet from the intersections in the study area (i.e., directly adjacent to the

19 Communication with Steve Smith, Program Supervisor, South Coast Air Quality Management District, and Impact Sciences, Inc., May 12, 2004 in conjunction with another project in the South Coast Air Basin.

intersections) based on projected traffic volumes from the intersections contained in the traffic study for the project.[20] The intersections were determined in the project's traffic study to operate at a level of service (LOS) between A through F. Intersections operating at a LOS of E or F are considered to have the potential to create a CO hotspot.[21] For the purposes of this analysis, intersections projected to operate at LOS D, E or F under future cumulative plus project traffic conditions were analyzed.

Maximum future cumulative plus project CO concentrations were calculated for peak hour morning and evening traffic volumes using the highest traffic volumes in the traffic report prepared for the proposed project.[22] Background CO concentrations for the UCR area were included in the analysis. The results of the CO hotspots analysis are presented in **Table 4.3-10, Maximum 2020 Carbon Monoxide Concentrations – Cumulative Plus Project**.

As shown, the CALINE4 screening procedure predicts that, under worst-case conditions, future CO concentrations at each intersection would not exceed the state 1-hour and 8-hour standards with the development of the proposed project. No significant CO hotspot impacts would occur to sensitive receptors in the vicinity of these intersections. Therefore, impacts would be less than significant impact with respect to the criterion.

20 Fehr and Peers, *Traffic Impact Analysis for University of California – Riverside LRDP Amendment #2 EIR*, (2011).

21 Institute of Transportation Studies, University of California, Davis, *Transportation Project-Level Carbon Monoxide Protocol*, (1997).

22 Fehr and Peers, *Traffic Impact Analysis for University of California – Riverside Long Range Development Plan EIR Amendment.* (2011).

Table 4.3-10
Maximum 2020 Carbon Monoxide Concentrations – Cumulative Plus Project

Intersection (LOS D, E, or F)	0 Feet	
	1-Hour[1]	8-Hour[2]
Chicago Avenue and Third Street	8.0	3.0
Iowa Avenue and Blaine Street	8.3	3.2
Rustin Avenue and Blaine Street	7.8	2.9
Iowa Avenue and Linden Street	7.9	2.9
Canyon Crest Drive and Linden Street	7.7	2.8
Kansas Avenue and University Avenue	8.0	3.0
Chicago Avenue and University Avenue	8.3	3.2
Iowa Avenue and University Avenue	8.3	3.2
University Village and University Avenue	8.4	3.3
I-215 SB Ramps and University Avenue	8.5	3.3
I-215 NB Ramps and University Avenue	8.0	3.0
Lot 1 and Campus Drive	7.6	2.7
Chicago Avenue and Martin Luther King Boulevard	8.8	3.5
Iowa Avenue and Martin Luther King Boulevard	8.6	3.4
Lot 30 and Martin Luther King Boulevard	8.7	3.5
Canyon Crest Drive and Martin Luther King Boulevard	8.8	3.6
I-215 SB Ramps and Martin Luther King Boulevard	7.9	2.9
Chicago Avenue and Le Conte Avenue	7.9	2.9
Chicago Avenue and Central Avenue	8.3	3.2
Canyon Crest Drive and Central Avenue	8.0	3.0
Exceeds State 1-hour standard of 20 ppm?	**NO**	—
Exceeds federal 1-hour standard of 35 ppm?	**NO**	—
Exceeds State 8-hour standard of 9.0 ppm?	—	**NO**
Exceeds federal 8-hour standard of 9 ppm?	—	**NO**

*Source: Impact Sciences, Inc. Emissions calculations are provided in **Appendix 4.3**.*
[1] *State standard is 20 parts per million. Federal standard is 35 parts per million.*
[2] *State standard is 9.0 parts per million. Federal standard is 9 parts per million.*

Mitigation Measures: No mitigation is required.

Impact 4.3-4 **Implementation of the proposed 2005 LRDP Amendment 2 would not expose sensitive receptors to substantial concentrations of toxic air contaminants. The impact would be less than significant.**

Toxic air contaminants (TACs) consist primarily of reactive organic gases, such as benzene and formaldehyde, polycyclic aromatic hydrocarbons, such as benzo(a)pyrene-10 and dibenz(a,h)anthracene-10, and metals, such as arsenic and lead. Diesel particulate matter (DPM) from

diesel-fueled engines has also been determined by CARB to be a toxic air contaminant as defined under Section 39655 of the Health and Safety Code.

The potential for project-related TACs to affect human health is typically assessed in terms of an increase in cancer risk and non-cancer health effects. The SCAQMD has established a threshold for evaluating human health risk impacts from TACs, which is based on an incremental increase in cancer risk. A project is considered to have a less than significant impact in terms of lifetime cancer risk, if the project would result in a maximum increase of no more than 10 in 1 million in the risk of contracting cancer during a lifetime of exposure to project emissions at any one receptor.

Potential non-cancer health effects are assessed by use of a "Hazard Index," which is the sum of the ratios of each chemical's hazard quotient (the hazard quotient is determined for each chemical by comparing the modeled exposure level at a particular receptor location to the acceptable exposure level for that chemical; in other words, a hazard quotient is the fraction of a non-cancer health effects threshold, for a particular contaminant, experienced by a person at a particular location). Hazard indices are calculated for both long-term (chronic) and short-term (acute) health effects, and a separate hazard index is calculated for each target organ group affected by the TACs being assessed. According to SCAQMD, a hazard index (HI) of 1.0 or less indicates that no adverse non-cancer health effects would be anticipated.

UCR conducted a comprehensive human health risk assessment (HHRA) to assess health risks (cancer risks and non-cancer health hazards) associated with full development of the campus under the amended 2005 LRDP by estimating both the lifetime cancer risk and hazard indices (URS 2010). The Campus conducts routine operations that generate emissions regulated by the State of California. The sources of emissions include: natural gas combustion sources, boilers and kitchen equipment, gasoline dispensing operations, emergency generators driven by internal combustion engines (ICEs), painting operations, and laboratory fume hoods (chemical usage). The HHRA evaluated potential health risk impacts associated with TAC emissions from these sources. TAC emissions were estimated based on current and projected fuel, material, and chemical usage, considered representative of the current and projected routine campus-wide operations through a horizon year 2020. The HHRA also evaluated the potential health risks associated with TAC emissions from diesel-fueled delivery trucks traveling on campus roads to make deliveries.

In addition, the HHRA incorporated the most recent toxicological values published by OEHHA, as of December 2010. Use of the OEHHA guidelines, which have been adopted by the South Coast Air Quality Management District, results in a worst-case analysis of risk. For example, the theoretical incremental cancer risk estimated in this HHRA is based on an individual being continuously exposed to emissions from routine campus-wide operations for 24 hours per day, 365 days per year, for 70 years at the same

specific location. Actual risks are likely to be substantially lower than those estimated using the OEHHA guidelines. A standard HHRA, such as this, consists of four basic steps to assess potential public health risk from a particular facility:

1. Emissions of TACs from the facility are quantified and segregated according to source type;
2. Ground-level impacts resulting from the transport and dilution of these emissions through the atmosphere are assessed by air dispersion modeling;
3. Potential public exposure to these compounds resulting from this atmospheric transport are calculated; and
4. Potential cancer and non-cancer health risks resulting from the calculated exposures are estimated using dose-response relationships developed from toxicological data.

In general, there are uncertainties at every step of the process, but the cumulative assumptions of risk assessments that follow standard regulatory practices, as this one does, are more likely to cause an over prediction of health risks rather than an underestimation, most likely by a substantial margin. The following factors may contribute to an over prediction of health risks:

1. A regulatory air dispersion model that tends to over predict ground-level chemical concentrations;
2. State-approved toxicity factors developed from human and animal data thought to represent an upper bound of potential cancer potency factors and the most sensitive responses to non-carcinogens;
3. An assumption of continuous 70-year exposure at a single off-campus residential location;
4. An assumption of continuous exposure as a student over an assumed 9-year exposure period at a single on-campus location.
5. An assumption of a continuous 9-year exposure period at day care center locations.

The OEHHA guidelines require the evaluation of potential health impacts from a facility at off-site residences and workplaces. Since the UCR campus has on-site residential and sensitive receptors, including day care centers and student housing, adequate receptor grid spacing was utilized to assess the exposure at specific on-campus locations. The off-campus exposure was calculated consistent with OEHHA's exposure and risk calculation guidance for a hypothetical residential maximally exposed individual (MEI). The off-campus MEI is assumed to live at the point of highest toxicity-weighted concentration of facility TAC emissions, in a residentially zoned area, for 24 hours per day, 365 days per year, for 70 continuous years. The MEI concept ensures that exposure will not be underestimated because time spent at work, on vacation, commuting locally, or moving from one residence to another would otherwise reduce the actual exposure to emissions from the UCR campus.

The on-campus exposure was calculated using the same approach as the off-campus exposure calculations, except for adjustments in exposure durations. According to OEHHA guidelines, the modeled results were multiplied by a factor of 9/70 to account for the assumption of a 9-year exposure period at the on-campus locations. An off-campus occupational MEI was not determined since the result is likely to be lower than the residential MEI because exposures occur over a shorter duration and exposure concentrations are lower. An on-campus occupational MEI was not determined since facility worker exposure determination is not required under the OEHHA guidelines and facility worker health and safety is regulated separately.

Table 4.3-11 summarizes the human health effects at resident MEI locations from campus operations at full development under the 2005 LRDP.

Table 4.3-11
Maximum Cancer Risk, Chronic and Acute Hazard for LRDP Operations

Receptor Type	Lifetime Excess Cancer Risk	Chronic Hazard Index	Acute Hazard Index
On-campus MEI	0.5 in a million	0.012	0.19
Off-campus MEI	6.7 in a million	0.028	0.081
SCAQMD Threshold	10 in a million	1.0	1.0
Exceeds Threshold?	**NO**	**NO**	**NO**

Source: URS 2010.

The lifetime excess cancer risk for all receptors types would be less than the significance threshold of 10 in 1 million, and the chronic and acute hazard indices would similarly be less than a value of 1.0. The impact would therefore be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.3-5 **Implementation of the proposed 2005 LRDP Amendment 2 would not create objectionable odors that could affect a substantial number of people. The impact would be less than significant.**

The SCAQMD considers wastewater treatment plants, wastewater pumping facilities, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing, fiberglass manufacturing, painting/coating operations, rendering plant, coffee roaster, food processing facilities, feed lots and dairies, green waste and recycling operations, and metal smelting

plants as odor emitting facilities. The campus does not contain any of these facilities and no such facility would be added to the campus under the amended 2005 LRDP.

Construction of the proposed project would require the use of diesel-fueled equipment, architectural coatings, and asphalt paving, all of which have an associated odor. However, these odors are not pervasive enough to cause objectionable odors affecting a substantial number of people. Consequently, construction of the campus facilities under the amended 2005 LRDP would not cause or be affected by odors.

The campus consists of a university land use type development. The operation of such facilities is not considered to be a significant source of odors. Academic research using odorous materials would take place inside buildings with the appropriate laboratory hoods and ventilation equipment, as required by regulations. Compliance with these regulations would not result in substantial odorous emissions associated with research activities. In addition, the proposed project would not be located near any of the potentially significant sources of odors identified above. Therefore, the proposed project would not cause odor effects nor expose receptors to odors. The impact would be less than significant.

Mitigation Measure: No mitigation is required.

Impact 4.3-6 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would conflict with or obstruct implementation of the applicable air quality plan. The impact would be significant.**

In compliance with the *State CEQA Guidelines*, this EIR evaluates whether the proposed project would conflict with or otherwise obstruct implementation of regional air quality plans. For air quality planning purposes, the SCAQMD creates emissions inventories based on existing and foreseeable future land uses within its jurisdiction. If a new project is consistent with the planned land use designation that was considered in the development of an AQMP, the project would not conflict and would not obstruct implementation of the applicable air quality management plan. Generally, a project's conformance with a local general plan that was taken into account in the preparation of an air quality management plan would demonstrate that the project would not conflict with or obstruct implementation of the air quality management plan.

The SCAQMD most recently completed an AQMP in 2007. This AQMP would have included the projected growth associated with the 2005 LRDP. However, development of the uses included in the proposed Amendment 2 to the 2005 LRDP were not foreseen at the time and would not be included in the 2007 AQMP projections for employment and population growth or in the SCAG growth projections for

the region. Furthermore, both construction and operational emissions associated with the development are conservatively estimated as being over SCAQMD significance thresholds for particulate matter and ozone precursors even after mitigation. Therefore, the proposed project would likely conflict with the region's air quality plan for addressing the region's nonattainment status for ozone and particulate matter.

During the planning horizon of the amended 2005 LRDP, future development of the campus would be guided as applicable by a range of LRDP Planning Strategies (PS) and are assumed as part of the proposed project. The following PSs are relevant to air quality.

PS Land Use 4	Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing.
PS Land Use 5	Remove existing family housing units on the East Campus, and provide replacement and additional units of family housing on the West Campus.
PS Transportation 1	Develop an integrated multi-modal transportation plan to encourage walking, biking and transit use.
PS Transportation 2	Expand shuttle or tram service connecting major parking lots and campus destinations, and linking the East and West Campuses. Coordinate this system with RTA routes and schedules.
PS Transportation 3	Provide a continuous network of bicycle lanes and paths throughout the campus, connecting to off-campus bicycle routes.
PS Transportation 4	Over time, limit general vehicular circulation in the central campus, but allow transit, service and emergency vehicle access, and provide access for persons with mobility impairments.
PS Transportation 5	Provide bicycle parking at convenient locations.
PS Transportation 6	Implement parking management measures that may include – Restricted permit availability – Restricted permit mobility – Differential permit pricing

During the planning horizon for the amended 2005 LRDP, the Campus would also continue to implement as applicable PP 4.3-1, described under **Impact 4.3-2**, and is assumed as part of the proposed project.

Mitigation Measures: In addition, the following mitigation measure will be implemented to address this impact.

MM 4.3-6 The Campus will implement **Mitigation Measure 4.3-1**, which is designed to reduce construction emissions. It will also implement **Mitigation Measure 4.3-2b** which will reduce air pollutant emissions resulting from traffic and energy consumption during campus operations.

Significance after Mitigation: It is anticipated that implementation of relevant Planning Strategies, and an existing campus Program and Practice, and **Mitigation Measure 4.3-6** would reduce the impact considerably, but not to a less than significant level. The proposed project would likely conflict with air quality management plans for ozone and particulate matter. The impact would be significant and unavoidable.

4.3.4.5 Cumulative Impacts and Mitigation Measures

Impact 4.3-7 **Implementation of the proposed 2005 LRDP Amendment 2 would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard. The impact would be potentially significant.**

According to the SCAQMD *CEQA Air Quality Handbook*, projects that are within the emission thresholds identified above should be considered less than significant on a cumulative basis unless there is other pertinent information to the contrary.[23] As shown in **Table 4.3-8** and **Table 4.3-9**, construction and operational emissions are estimated to exceed the SCAQMD thresholds of significance. Therefore, the proposed project would result in a cumulatively considerable contribution to air quality impacts and would be significant on a cumulative basis.

The SCAQMD states that for projects that exceed the emissions-based thresholds of significance, cumulative impacts should be determined based on whether the rate of growth in ADT or VMT for the proposed project exceeds the rate of growth in population.

Buildout of the campus under the amended 2005 LRDP would increase campus population to approximately 41,393 persons by 2020. Population data for Riverside County were based on SCAG

23 South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 9–12.

projections.[24] Project ADT was obtained from the URBEMIS2007 model. Riverside County ADT was obtained from the EMFAC2007 on-road motor vehicle emissions model developed by CARB. These figures were used to calculate and compare the ratio of population growth to ADT growth. As shown in **Table 4.3-12, Comparison of ADT to Population Growth at LRDP Buildout in 2020**, the rate of growth in ADT is marginally higher than the rate of growth in population. As such, cumulative impacts would be significant based on this criterion as well.

Table 4.3-12
Comparison of ADT to Population Growth at LRDP Buildout in 2020

Population Comparison	ADT	Population
Proposed Project [1]	83,712	13,427
Riverside County[2, 3]	12,450,400	2,809,003
Ratio of Project to Riverside County	**0.0067**	**0.0048**

Source: Impact Sciences, Inc.

[1] *Estimated ADT for UCR population as determined by URBEMIS2007.*

[2] *Estimated ADT in Riverside County as determined by EMFAC2007.*

[3] *Southern California Association of Governments, "City Projections," http://www.scag.ca.gov/forecast/process.htm. 2008*

Mitigation Measures: To address this impact, the following mitigation measure will be implemented.

MM 4.3-7 The Campus will implement **Mitigation Measure 4.3-2b,** which will reduce traffic associated with campus operations.

Significance after Mitigation: As mentioned, UCR is aggressively pursuing measures to reduce vehicle traffic associated with the campus due to both campus-owned fleet vehicles and by student, faculty, and staff commuting. The Campus is working with the local transit agency to improve mass transit options for students, staff and faculty. The Campus operates an extensive vanpool program, contracts with Zipcar to provide hourly car rentals on campus, and provides incentives for carpooling and use of alternative fuel vehicles for commuting. UCR is continuing to develop measures to further reduce vehicle traffic as detailed in the Climate Action Plan for the campus and this EIR in **Section 4.16, Greenhouse Gas Emissions**. These measures are intended to allow UCR to meet its GHG reduction target for 2020, which is to reduce GHG emissions to 1990 levels. This will not be possible without significant reductions in ADT and vehicle use, resulting in a much lower ADT than that assumed by URBEMIS for the types of land uses included in the amended 2005 LRDP, especially as the URBEMIS values are based on a 'business as usual' scenario with no consideration for AB 32 reduction requirements or other measures to reduce ADT

24 Southern California Association of Governments, "City Projections," http:/scag.ca.gov/forecast/index.htm. 2008.

or vehicle traffic. While no data is currently available to quantify actual reductions to UCR's ADT values by 2020, the reduction required to meet Riverside County's ADT to population ratio is approximately 8 percent. UCR's commitment to achieve 1990 level GHG emissions by 2020 requires an overall reduction of over 50 percent. As vehicle emissions represent a significant portion of campus emissions, vehicle traffic will need to be reduced by more than 8 percent to meet this commitment. Therefore it can be assumed that actual ADT growth at UCR resulting from development according to the 2005 LRDP will be less than the population growth as a ratio of Riverside County ADT and population. Consequently, cumulative impacts would be less than significant after mitigation.

4.3.5 REFERENCES

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4.4 BIOLOGICAL RESOURCES

This environmental factor was adequately addressed in the 2005 LRDP EIR (UCR 2005). The Initial Study prepared for the proposed 2005 LRDP Amendment 2 (**Appendix 1.0**) found that the proposed Amendment 2 would not have any potentially significant impacts on biological resources. Implementation of the proposed 2005 LRDP Amendment 2 would not change the significance of any impacts identified in the 2005 LRDP EIR for this environmental factor. No further evaluation of this environmental factor is required. No scoping comments were received on the NOP requesting any additional evaluation of this environmental factor.

4.5 CULTURAL RESOURCES

This environmental factor was adequately addressed in the 2005 LRDP EIR (UCR 2005). The Initial Study prepared for the proposed 2005 LRDP Amendment 2 (**Appendix 1.0**) found that the proposed Amendment 2 would not have any potentially significant impacts on cultural resources. Implementation of the proposed 2005 LRDP Amendment 2 would not change the significance of any impacts identified in the 2005 LRDP EIR for this environmental factor. No further evaluation of this environmental factor is required. No scoping comments were received on the NOP requesting any additional evaluation of this environmental factor.

4.6 GEOLOGY AND SOILS

This environmental factor was adequately addressed in the 2005 LRDP EIR (UCR 2005). The Initial Study prepared for the proposed 2005 LRDP Amendment 2 (**Appendix 1.0**) found that the proposed Amendment 2 would not have any potentially significant impacts on geology and soils. Implementation of the proposed 2005 LRDP Amendment 2 would not change the significance of any impacts identified in the 2005 LRDP EIR for this environmental factor. No further evaluation of this environmental factor is required. No scoping comments were received on the NOP requesting any additional evaluation of this environmental factor.

4.7 HAZARDS AND HAZARDOUS MATERIALS

4.7.1 INTRODUCTION

This section describes the existing conditions related to the use, storage, and transport of hazardous materials on the UCR campus and analyzes the potential for implementation of the proposed 2005 LRDP Amendment 2 to create a significant hazard through the routine transport, use, or disposal of hazardous materials, or through the release of hazardous materials into the environment.

The information included in this section was taken from various sources, including the UCR Department of Environmental Health and Safety, the State Department of Toxic Substances Control (DTSC), the 2005 LRDP EIR, other previous environmental documentation prepared for the UCR campus, and other campus data sources.

In response to the Notice of Preparation issued for this EIR, a member of the public commented that as part of the proposed Amendment 2, the Campus would re-designate the *Campus Support* parcel at the corner of MLK and Canyon Crest Drive to *Parking* which would then require the new EH&S facility to be located on Linden Street in the northeastern corner of the East Campus. Therefore, this EIR needs to evaluate the risks to residential neighborhoods around the campus from the transport of hazardous materials to and from the proposed EH&S facility on the east side of the campus. Another member of the public requested that the analysis consider the proximity of on- and off-campus school and childcare facilities to the proposed EH&S facility.

The proposed EH&S Expansion project is a separate and independent project that has been proposed by the Campus to replace its existing EH&S facility with a larger, state of the art facility. The preparation of a project-level EIR for that project is currently underway. Expanded EH&S facility capacity is needed in order for the Campus to continue to comply with existing and future regulations concerning hazardous materials storage, to more efficiently handle and store waste materials, consolidate operations, and replace a facility that is outdated. The Campus determined a need for a new EH&S facility prior to the adoption of the original 2005 LRDP, well before the Campus' current proposal to establish a school of medicine at the campus as part of the 2005 LRDP Amendment 2. The proposed Amendment 2 does not include any changes to the campus LRDP that affect the need for a new EH&S facility nor does the amendment include a proposal to relocate the existing EH&S facility from its current site. While it is accurate that the re-designation of the *Campus Support* area at the corner of MLK and Canyon Crest Drive from *Campus Support* to *Parking* would eliminate a site for the new EH&S facility that had previously been approved for this use, it should be noted that the EH&S facility is a land use that can be located under the 2005 LRDP on lands designated *Campus Support* or *Academic*. Thus, in addition to the Linden Street

location in the *Campus Support* land use area, there are areas designated *Academic* on both the East Campus and the West Campus which could potentially be used for this facility and there are other *Campus Support* areas on the West Campus where a secondary facility or a new consolidated facility could be located. Therefore, the proposed amendment does not dictate that a new EH&S facility must be located on Linden Street. As noted above, a project-level EIR is being prepared by UCR that will evaluate the effects of constructing and operating a new EH&S facility, and these issues and others raised by the public during the scoping of that project will be fully analyzed at a project-level of detail in that EIR.

4.7.2 EXISTING CONDITIONS

The term "hazardous material" is defined in different ways for different regulatory programs. This EIR uses the definition given in California Health and Safety Code Sections 25501(n) and (o), which defines hazardous material as:

> *Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous wastes, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.*

By convention, most hazardous materials are thought to be hazardous chemicals, but certain radioactive materials and biohazardous materials, as defined here, are also hazardous. A "hazardous waste," for the purpose of this analysis, is any hazardous material that is abandoned, discarded, or recycled, as defined by the California Health and Safety Code Section 25124. In addition, hazardous wastes occasionally may be generated by actions that change the composition of previously non-hazardous materials. The criteria that characterize a material as hazardous also characterize a waste as hazardous: toxicity, ignitability, corrosivity, or reactivity.

4.7.2.1 Hazardous Materials at UCR

As stated in the 2005 LRDP EIR, the Campus is a licensed generator of hazardous waste, which includes chemical, radioactive, and biohazardous (infectious) waste. The policies and procedures for the safe management of hazardous materials and wastes at UCR are approved and administered at the Vice Chancellor level. The UCR Vice Chancellor Finance and Business Operations (VC-FBO) organization includes the Environmental Health and Safety (EH&S), which is the principal administrator for hazardous materials/waste management on the UCR campus. EH&S is charged with issuing policies (approved by the VC–FBO), evaluating departmental activities, and disseminating general information

regarding the handling, storage, and disposal of hazardous materials and wastes, in part through discussions with the department heads, training of employees and teaching assistants, and also through distribution of various safety manuals, newsletters, and other publications. Most of the hazardous materials used on the campus are associated with research and instruction (UCR 2005). The primary users of hazardous materials include the following departments:

- Air Pollution Research Center
- Art/Photography
- Biochemistry
- Biology
- Biomedical Sciences
- Botany
- Chemistry
- Entomology
- Geology
- Health Services
- Institute of Geophysics and Planetary Physics
- Nematology
- Physical Plant
- Physics
- Plant Pathology
- Soil and Environmental Sciences

According to the 2005 LRDP EIR, hazardous materials that are used by these departments include flammables and combustibles, acids and bases, biohazards, pesticides and herbicides, explosive and blasting agents, compressed gases, cryogenic fluids, radioactives, oxidizers, and poisonous gases and could include the following (UCR 2005):

- Solvents used for cleaning, extraction, or other laboratory activities
- Reagents (chemical starting materials)
- Reaction products (products of chemical reactions), which may have unknown compositions
- Radioisotopes (radioactive elements used to stimulate or trace chemical reactions)
- Infectious agents, including bacteria, viruses, and other materials encountered in biological studies
- Test samples (e.g., specimens such as blood, tissue, soil, or water), prior to use in a testing procedure
- Paints and paint thinners (both oil-based and latex) for fine arts
- Set design and construction materials used in theater arts classes and productions

In addition to the above, maintenance and physical plant units on campus, including grounds, custodian services, fleet services, pest management, and craft shops, also use a wide variety of commercial products

formulated with hazardous materials during the course of daily campus operations. These include fuels, oils and lubricants, cleaners, solvents, paints, pesticides, adhesives, sealers, refrigerants, and others. Ongoing facilities management activities also include the operation and maintenance of boilers and other central plant equipment, underground storage tanks, asbestos abatement projects, and the replacement of electrical equipment (e.g., transformers and capacitors) containing polychlorinated biphenyls (PCBs). PCBs are currently used in transformers and capacitors located in several campus buildings and facilities. Also, almost all campus buildings contain commercial products (e.g., cleaners, copier toners, etc.) that could be considered "hazardous materials" under regulatory definitions (UCR 2005). There are several locations on campus where oil is stored. These include various locations on the West Campus (south of MLK), including (1) two 1,500-gallon, double-wall diesel and gasoline fueling underground storage tanks located at the farm and vehicle equipment maintenance shop; (2) one 5,000-gallon, double-wall, aboveground diesel fuel storage tank (AST) in the southern part of this area; (3) one 5,000-gallon, double-wall diesel fuel AST in the western part of this area (UCR 2005).

The 2005 LRDP EIR also notes that certain locations on campus may have been contaminated by various hazardous substances as a result of the former uses of the site, leaks from unidentified underground storage tanks, or unidentified buried debris that could contain hazardous substances or hazardous byproducts. If not managed safely, contaminated soil, groundwater, or building materials have the potential to pose hazards to construction workers and existing and future campus occupants and nearby land uses. All identified contamination on the campus has either been remediated, or is in the process of undergoing remediation (UCR 2005).

In conformance with the State Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Law), UCR has prepared a Business Plan that contains information about the location of, and emergency procedures for, campus buildings in which hazardous materials are handled. The Business Plan Law requires periodic reporting of inventory changes at UCR to the local administering agency, which is the City of Riverside Fire Department. The Business Plan lists the names and quantities of all hazardous chemical materials found on campus in quantities greater than 1 gallon of liquid, 10 pounds of solids, or 100 cubic feet of gas per building. Compressed gases, fuels, and certain bulked waste chemicals (e.g., solvents such as toluene and xylene) are examples of the kinds of chemicals that are subject to Business Plan reporting requirements. Smaller quantities, such as bottled chemical reagents in laboratories, do not require reporting (UCR 2005). The primary elements of the UCR Business Plan are as follows:

- Generate a master list of laboratories and machine shops which store hazardous materials and waste in each building on campus
- Provide site maps indicating location of hazardous materials and wastes

- Inspect each laboratory/shop and assign a particular chemical classification to the room
- Label each laboratory/shop with the appropriate legend
- Re-inspect the laboratory/shop annually to determine if the volume or type of chemicals present has changed
- Provide the Riverside Fire Department with a master list of laboratories/shops along with their classification category
- Inventory the chemical storerooms and high-hazard laboratories on the classification list
- Provide an emergency response plan

The Business Plan, in addition to providing an inventory of laboratories/shops containing hazardous materials, also includes a reference to the location of asbestos on campus.

EH&S provides instructions to campus users of hazardous materials regarding proper disposal of the resulting hazardous wastes at UCR; these include prohibitions against the discharge of any hazardous wastes into storm drains or the sanitary sewer system. **Table 4.7-1, Amount of Hazardous Waste Generated by UCR in 2010,** identifies the amount of hazardous waste currently generated on the UCR campus per year.

Table 4.7-1
Amount of Hazardous Waste Generated by UCR in 2010

Waste Type	Pounds/year
Medical/Biohazardous Waste	2,760
Radioactive	2,500
Chemical Waste	65,000
Electronic	11,000
Universal	7,500

Source: UCR EH&S Department.2010.

Chemical Hazardous Waste

As stated in the 2005 LRDP EIR, there are 14 types of chemical waste managed by EH&S, including solvents, cleaners, paint/sludge, asbestos, mercury, photo chemicals, formalin (formaldehyde solution), oil/lubricants, pesticides, adhesives/sealers, acids, explosives/reactives, and organic and inorganic laboratory chemicals. UCR does not treat, store (for longer than 90 days), or dispose of hazardous chemical waste on site. All waste is shipped off site to licensed disposal facilities using a contracted

licensed hazardous waste transporter. UCR tracks waste with the manifests required by federal and state law. UCR is required to use only UC-approved and -audited contractors, transporters, and disposal sites. In addition, UCR must file reports with the state detailing waste disposal and recycling activities in addition to paying annual hazardous waste taxes based on volumes of waste disposed (UCR 2005).

Before EH&S will collect materials, the materials must be packaged and labeled properly, which includes placing them in appropriate sealed containers, segregating incompatible materials, and identifying all components with approximate concentrations. Wastes are stored by EH&S in the "90-Day Room" for a maximum of 90 days, although they are generally removed approximately every 60 days. Chemical wastes are further segregated by type, and consolidated, bulked, or compacted before removal from the campus by a licensed vendor to permitted off-campus facilities for incineration, treatment, recycling, or other means of disposal (UCR 2005). Chemical hazardous waste generated at the campus is picked up by the licensed vendor approximately six times a year (UCR – EH&S 2010).

Radioactive Waste

The UCR campus generates radioactive wastes from research and teaching activities. The amount of radioactive waste generated by the campus varies depending upon changes in research projects, techniques, and methodologies. Radioactive substances contain atoms that spontaneously emit radiation from the transformation of unstable atomic nuclei, which result in chemically different substances that may or may not be radioactive. These radioactive atoms are called "radio-nuclides" or "radioisotopes." Because radioactive materials emit ionizing radiation, their presence can be detected easily. Researchers and health care professionals take advantage of this easy detectability by using radioactive materials to study various biochemical functions in animals and humans. Limited types and quantities of radioisotopes are used in research laboratories. All radioisotopes used on campus are listed in the Campus Broadscope Radioactive Materials License issued by the state and must be authorized by EH&S.

Like chemical wastes, low-level radioactive waste (LLRW) from campus teaching, research, and health sciences-related activities is collected and managed by Integrated Waste Program (IWP) staff. UCR normally collects dry and liquid LLRW directly from its sources (research or clinical users). In accordance with strict regulatory guidelines and procedures, the IWP transports the waste to a facility designed to safely store and contain materials. In accordance with these guidelines, the IWP prepares and packages the waste for shipment and disposal, or for decay-in-storage on the campus. Dry LLRW with a half-life of less than 100 days is stored for decay for 10 half-lives (as part of the decay-in-storage program) in accordance with the Broadscope Radioactive Materials License until its radiation levels are indistinguishable from background levels. The waste is then compacted for disposal as nonradioactive waste and placed in dedicated storage containers for collection and transportation to a solid waste

landfill. Liquid LLRW with a half-life of less than 90 days is bulked and containerized for off-site disposal. For wastes that are longer-lived, the final disposal depends on the hazard class of the LLRW. UCR contracts with a radioactive waste vendor to remove radioactive waste from the campus for disposal at approved radioactive waste facilities. Radioactive waste generated at the campus is picked by the licensed vendor for disposal two times a year (UCR – EH&S 2010). No radioactive waste is incinerated on campus (UCR – EH&S 2010).

Biohazardous Waste

Various biologically hazardous substances are used for research on the UCR campus like recombinant DNA molecules, infectious agents, parasites, and other biological agents. By statutory definition, biohazardous waste include biohazardous laboratory wastes; microbiologic specimens sent for analysis; specimens or tissues removed during surgery that are suspected of containing an infectious agent; animal parts, tissues, or fluids suspected of containing an infectious agent; fluid blood from animals known to be infected with a highly communicable disease; and discarded materials contaminated with excretion, exudate, or secretions from quarantined animals or humans (UCR – EH&S 2010).

UCR policies for monitoring, routine inspection, reporting, and waste management have been developed to minimize community and worker exposure to potential hazards associated with medical waste and biological hazards. Activities that create the potential for biohazardous aerosols are conducted in biosafety cabinets, which filter all released air to remove biohazardous materials. Biosafety cabinets and equipment with special filters to remove biological agents are disinfected at the end of the workday or whenever they are grossly contaminated. These cabinets must also be certified when installed, annually, and whenever they are moved or undergo major servicing (HEPA filter replacement, motor repairs, etc.) (UCR –EH&S 2010).

As shown in **Table 4.7-1**, the amount of biohazardous wastes generated at UCR is about 2,760 pounds per year. UCR complies with regulations that specify that infectious wastes be stored in refrigerated (below freezing) facilities for not more than 90 days and that such wastes be properly packaged, labeled, and disposed. If biohazardous wastes are stored above freezing, then they may be stored for 7 days or less. There are no licensing requirements for the generation of infectious waste. Infectious waste may also be rendered noninfectious through steam sterilization. UCR contracts with a biohazardous waste vendor to ship infectious wastes from the campus off site for incineration. Biohazardous/medical waste is picked up by the licensed vendor once a month (UCR – EH&S 2010).

Laboratory Animal Use

Research and teaching in the biomedical sciences programs on the campus involves the use of laboratory animals. The use and care of animals in research is required to comply with protocols established by the National Institutes of Health and the Animal Welfare Act. Laboratory research involving research animals and animal care activities produces biohazardous wastes. Safety hazards are associated with handling of research animals (UCR – EH&S 2010).

Site Contamination

Existing buildings or potential building sites may contain various hazardous substances as a result of former uses of the sites, leaks from unidentified underground storage tanks (UST), or unidentified buried debris that could contain hazardous substances or hazardous byproducts. Contaminated soils, building materials, or groundwater have the potential to pose hazards to construction workers and existing and future campus occupants and nearby development if not managed and remediated safely (UCR 2005).

One of the most common sources in site contamination stems from oil leaking from storage tanks that may have been located in various areas of the UCR campus. Areas where oil storage has occurred include the teaching and agricultural research fields on the West Campus, and the Corporation Yard located north of Linden Street on the East Campus. A UST, previously located at the Grounds Maintenance Facility along East Campus Drive, was removed and the soil tested to confirm no contamination remained. Subsequently, an above-ground tank was installed, including proper containment facilities. Remediation was also required in the area where one UST was removed in the agricultural operations yard on the West Campus, south of MLK. As this site is located south of MLK, development associated with the proposed 2005 LRDP Amendment 2 would not disturb this site. This site, as well as each of the other UST locations where spills or leaks had occurred, have been remediated (and received regulatory closure) and no further action at those locations is necessary (UCR – EH&S 2010).

The campus is listed on the CORTESE list, which is a list of hazardous waste sites complied by the State of California pursuant to Government Code Section 65962.5, due to contamination that was identified on the West Campus, south of MLK. The campus is not, however, identified as a "border zone" property. An approximately 1-acre area referred to as "the pits" was used for disposal of pesticides from agricultural operations. Pesticide disposal included glass and can containers, which remained intact until removed during the remediation effort. As a result, contamination remained highly localized. As part of the remediation effort and consistent with state requirements, soil was excavated and tested until contamination levels were below thresholds. No groundwater contamination has been detected, due to

the depth of groundwater at the site and the localized nature of the contamination. Remediation of the area was completed in December 2002 (UCR – EH&S 2010).

Building Materials Contamination

Asbestos

Asbestos, a naturally occurring fibrous material, was used for years in many building materials for its fireproofing and insulating properties. Any activity that involves cutting, grinding, or drilling during building renovation or demolition or relocation of underground utilities could release friable asbestos fibers unless proper precautions are taken. In accordance with Sections 25915 through 25916 of the California Health and Safety Code, EH&S maintains a campus-wide inventory of locations of asbestos-containing building materials and provides annual campus-wide notification of locations containing asbestos. Appropriate signs are posted when asbestos-containing materials are disturbed during construction or renovation at campus locations, in accordance with State and South Coast Air Quality Management District regulations (UCR – EH&S 2010).

Lead

Lead is a naturally occurring metallic element. Among its numerous uses and sources, lead can be found in paint, water pipes, solder in plumbing systems, and soils around buildings and structures painted with lead-based paint. In 1978, the federal government required the reduction of lead in house paint to less than 0.06 percent (600 parts per million). Because many structures on the UCR campus were constructed prior to 1978, wall surfaces and other building materials may contain lead-based paints. As required by the Residential Lead-Based Paint Hazard Reduction Act, the Campus provides appropriate disclosure of lead hazards and also provides information from the EPA regarding the risks and effects of lead exposure (UCR – EH&S 2010).

Polychlorinated Biphenyls (PCBs)

PCBs are organic chemicals, usually in the form of oil, that were formerly used in electrical equipment, including transformers and capacitors, primarily as electrical insulators. Some PCB-containing electrical equipment (e.g., transformers and capacitors) are still present on the UCR campus. In addition, some fluorescent light ballasts that contain PCBs could also be present in existing buildings. The Campus has an ongoing program to replace electrical equipment that contains PCBs (UCR – EH&S 2010).

Mercury

Elemental mercury is an insoluble, liquid, inorganic metal. It is commonly used in laboratory and medical equipment such as thermometers and manometers (used for measuring pressure). Other uses include electrical equipment and some water pumps. Due to accidental spills and historic disposal practices before the adoption of more stringent environmental regulations pertaining to hazardous waste disposal, it is possible that elemental mercury may be present in research laboratory sink traps, in cupboard floor spaces, or in sewer pipes that could be exposed in the event of building renovation or demolition (UCR – EH&S 2010).

4.7.2.2 UCR Programs and Practices

As described in the 2005 LRDP EIR, the Campus EH&S has the primary responsibility of coordinating the management of hazardous materials on campus. This office has broad administrative and surveillance responsibilities over operations on campus, to provide departments and users the tools such that they may ensure that appropriate standards of safety including biological and radiation safety, fire prevention, sanitation, and hygiene are met for the protection of campus personnel, property, and the public. EH&S develops and assists the campus community in the implementation of compliance strategies for all federal and State regulations governing the handling of hazardous materials and wastes on the campus (UCR – EH&S 2010).

Specific EH&S hazardous waste management responsibilities include the following:

- Collection of hazardous materials from laboratories
- Determination of the recyclability of the materials
- Delivery of hazardous materials to a short-term handling facility
- Classification of hazardous waste by characteristics, physical form and hazard class
- Segregation of waste by compatibility and reactivity
- Packaging of compatible waste in accordance with applicable federal and State regulations
- Appropriate labeling of each waste container
- Arrangement for the transportation and disposal of hazardous wastes by a licensed vendor to licensed treatment storage or disposal facility (TSDF)

To help improve the health, safety, and environmental performance in all work practices and activities on the UCR campus, EH&S offers the following programs and services:

- Biosafety
- Emergency Management
- Campus Emergency Response Plan
- Environmental Health
- Environmental Programs
- Hazardous Materials Program
- Spill Prevention, Control & Countermeasures Plan
- Industrial Hygiene & Safety
- Laboratory/Research Safety
- Radiation Safety
- Training & Publications
- Integrated Waste Management

Detailed information regarding these programs are provided in the Campus's EH&S website (http://www.ehs.ucr.edu/), which provides each program's elements, contact personnel, applicable manuals and policy, and Web links to other pertinent government agencies and information sources (UCR – EH&S 2010). A brief description of each program is provided below.

Biosafety

As discussed in the 2005 LRDP EIR, the Biosafety program is designed to minimize the health risk to employees, students, and the public from potential exposure to biohazardous materials that are used in research and teaching activities at UCR. This program is designed to maintain a healthy work environment by educating employees on the requirements for the safe handling and use of biohazards in the laboratory such as safe work practices and procedures, personal protective equipment, and engineering controls. The program is based on government regulatory requirements, guidelines, and current professional standards. Included in the Biosafety program are the Bloodborne Pathogen Exposure Control Plan and the Medical Waste Management Plan. The Bloodborne Pathogens Exposure Control Plan provides information and guidance to those employees at UCR who work with or come in contact with Bloodborne Pathogens, such as Hepatitis B Virus (HBV) and Human Immunodeficiency Virus

(HIV). EH&S at the UCR Campus has also prepared a Medical Waste Management Plan as guidance for employees who handle, store, treat, or transport medical waste (e.g., the Campus Health Center). At UCR, medical waste is treated by on-site steam sterilization within the generating building or facility using registered and approved autoclaves, incineration in the permitted on-site incinerator, or transported off site by a registered hazardous waste hauler for treatment at a permitted medical waste treatment facility (UCR – EH&S 2010).

Emergency Management

As stated in the 2005 LRDP EIR, the Emergency Management program develops campus and department emergency operations plans to ensure preparedness against earthquakes, fires, and hazardous material spills. This program manages both the Campus Emergency Operations Center (EOC) and hazardous materials emergency response team (ERT). The Campus Emergency Response Plan (described later in this section) has been designed to provide basic guidelines and operational procedures for campus personnel during emergency situations (UCR – EH&S 2010).

Environmental Health

As described in the 2005 LRDP EIR, the Environmental Health (EH) program provides program oversight, consultation services, facility inspections, construction plan review, and training for the campus community to achieve compliance with local public health laws. EH works to ensure safe and sanitary food preparation, storage, and handling, ensure safe drinking water, provide sanitary bathing (pool) conditions, properly manage pest control, ensure sanitary housing conditions, and prevent the spread of communicable disease. Although the EH program includes many elements, the only one that pertains to the discussion of hazardous materials in this section of the EIR is the Pesticide Safety Program (PSP). This PSP provides a comprehensive campus policy to comply with federal, state, and local safety laws and regulations for employees who handle pesticides. The PSP provides safety guidelines for pest control operations in agricultural and field trial experimental use (UCR – EH&S 2010).

Environmental Programs

Environmental Programs (EP) provides consulting/project oversight services to campus departments who have contaminated sites or other environmental compliance issues. Specific goals include: remediation and closure of contaminated sites, compliance with underground and above ground storage tank upgrade and management requirements, minimization of campus liability in real estate transfers, pollution reduction/prevention and when necessary monitoring of soil, air, and water conditions. Overall, EP serves to protect the campus and surrounding community from routine and accidental releases associated with air toxics/pollution, above and underground storage tanks, asbestos, lead, and hazardous

materials and waste. In addition, EP interfaces with federal, State, and local regulatory agencies to represent campus concerns (UCR – EH&S 2010).

Campus Emergency Operations Plan

As discussed in the 2005 LRDP EIR, to fulfill statutory requirements of the California Code of Regulations, a Campus Emergency Operations Plan (EOP), which is implemented by EH&S' Fire Prevention staff, has been developed to establish a continuing state of emergency readiness and response on the UCR campus. The plan will be invoked to manage all emergency incidents occurring during a natural and/or man-made disaster and be utilized to the maximum extent possible to protect life and property, and to restore the campus to normal operating conditions in the shortest possible time. Emergency incidents that result from known or suspected hazardous materials spills or releases to the air, ground, or water on- or off-campus are among the many types of events that will be managed under this plan. The plan is an all-hazard based approach and provides the basic administrative structure and protocols necessary to cope with credible emergencies (UCR – EH&S 2010).

Hazardous Materials Program

As described in the 2005 LRDP EIR, the Hazardous Materials Program (HMP) manages the campus chemical inventory and hazard information in compliance with federal, State, and local hazardous materials regulations. HMP oversees the Campus Business Plan described above, and generates and maintains building specific information for emergency response personnel to help insure employee safety and environmental responsibility. In addition, HMP also assists employees on campus in requesting and understanding Material Safety Data Sheets (MSDSs), which provide information on using chemicals and chemical products safely in the workplace, and maintains a central database of all MSDSs used on campus. Furthermore, this program provides information regarding proper chemical labeling requirements and storage practices, and conducts and distributes (upon request) chemical inventories of non-office environments (UCR – EH&S 2010).

Industrial Hygiene and Safety

The Industrial Hygiene and Safety (IHS) program serves to assist individuals and departments who have questions regarding the identification, evaluation, and control of physical, chemical, musculoskeletal, and other hazards of environmental or occupational origin. Major services include indoor air quality evaluations; certification of chemical fume hoods; respiratory protection selection and fit testing; hearing conservation; identifying permit-required confined spaces; computer worksite evaluations; and regulatory guidance for safety and health compliance. Included in this program are Respiratory Protection Program (RPP) and the Injury/Illness Prevention Program (IIPP) the purpose of which is to

help maintain a safe and healthful work environment on campus by providing consultation to the UCR community on matters of health and safety, monitoring and advising personnel using radiation, carcinogens, and other hazardous material, and interpreting external regulations and recommending appropriate compliance strategies (UCR – EH&S 2010).

Laboratory/Research Safety

The Laboratory/Research Safety Program provides both a point of contact for the campus research community and liaison between the various components within EH&S. The goal of the program is to incorporate the requirements of the various regulatory agencies in a smooth, coherent program. The staff in this program provides training, technical, research, safety advice, and process hazard review both through direct consultations and participation on a variety of safety committees. This includes design review for construction and renovation, departmental Chemical Hygiene Plan review, Campus Chemical Hygiene Plan maintenance and revision, field research guidance, faculty outreach and support, protocol development, and guidance for safe experimental design. Elements of this program that regulate hazards and risk of upset include the Chemical Hygiene Plan, Process Hazard Review, Laboratory Policies and Procedures, and Research Accident Investigation (UCR – EH&S 2010).

Chemical Hygiene Plan

One of the components of the UCR IIPP is the Chemical Hygiene Plan (CHP), which is applicable only to laboratories. The purpose of the CHP is to minimize exposure of laboratory personnel and students to health and physical hazards presented by hazardous chemicals used in laboratories at UCR. Each department/unit has developed and is currently implementing a Departmental CHP. The role of EH&S is to (1) assist in the development of departmental and individual Chemical Hygiene Plans; (2) provide Material Safety Data Sheets and other hazard information on request; (3) perform monitoring and inspection to determine compliance with federal, state, and local health and safety regulations; (4) assist with the development of safety training and education programs for CHP participants; (5) review, upon request, departmental or individual Chemical Hygiene Plans; and (6) perform annual review of Chemical Hygiene Plans (UCR – EH&S 2010).

In providing safety in working with hazardous chemicals, the CHP also works in conjunction with the Pesticide Safety Program to establish a safe working environment for all UCR employees who use pesticides. The departmental CHPs serve to minimize pesticidal chemical exposure to all persons that are involved in the use of such chemicals in laboratories on campus (including plant labs, lath houses, or greenhouse environments).

Radiation Safety

The Radiation Safety (RS) staff serves to ensure project safety while satisfying the requirements of regulations, policies, and procedures. Policies and procedures related to the use of radiation on campus are approved by the UCR Radiation Safety Committee and implemented by the RS Officer and associated staff. RS facilitates and enhances campus research by providing a full range of radiation safety services to individuals working with all types of radiation (ionizing, non-ionizing, and lasers). Under UCR's policy, the level of radiation exposure to employees, students, and the public must be "As Low as Reasonably Achievable" (ALARA) (UCR – EH&S 2010).

EH&S serves to implement the RS program, which includes surveillance of all users of radioisotopes and/or radiation-producing machines and equipment, monitoring of exposure levels, investigation of incidents, safety consultation, training in radiation safety, radiation safety services, and management of radioactive wastes. The EH&S Director is responsible for the review of UCR policies on radiation and radiation safety. In collaboration with the Radiation Safety Committee, EH&S has developed the UCR Radiation Safety Manual to serve as the principal source of guidance for the safe and responsible use of sources that produce ionizing and non-ionizing radiation by laboratory personnel at UCR. The Manual contains policies and procedures that satisfy the requirements of the various agencies that regulate the use of these radiation sources, and details how the appropriate local, State, and federal regulations will be applied at UCR. In accordance with California regulations and the University Broad Scope Radioactive Materials License, individuals planning to use radioactive materials must apply for an authorization from EH&S (UCR – EH&S 2010).

Training and Publications Program

The Training and Information Program (TIP) coordinates mandatory and specialized training and publications to advise campus personnel of health, safety, and environmental programs on campus. Workplace safety training is required at the time of hire, when new duties are assigned, and when a new hazard is introduced into the workplace. TIP also reviews and disseminates regulatory training requirement updates and developing and publishing safety information (UCR – EH&S 2010).

Integrated Waste Management

The Integrated Waste Management Program supports the campus mission of instruction and research by providing campus personnel with the tools, information, and assistance necessary to safely manage hazardous waste and minimize hazardous waste generation. Integrated Waste Management further protects hazardous waste generators, the campus environment, and the campus administration by providing hazardous waste consultation services, compliance guidelines, and ensuring safe, legal, long-

term solutions for hazardous waste management. In addition, Waste Management staff participates as members of the Campus Emergency Response Team (UCR – EH&S 2010).

The program consists of hazardous waste management, waste minimization, and regulatory compliance information. Management information comprises the bulk of the program, and includes guidelines regarding the determination and characterization of hazardous waste. The program guidelines also lists the chemical profiles, handling and use precautions (including protective equipment), and accumulation, storage, storage compatibility, labeling, and disposal procedures for all substances that are used on campus and have been classified as extremely hazardous or acutely hazardous (UCR – EH&S 2010).

The program also includes the Sharable Chemicals Repository and Placement Service (SCRAPS), which reduces the volume of hazardous materials that ultimately require disposal. The Sharable Chemicals Inventory is split up into two sections. The first is a list of all the chemicals in the program storage room, all of which are available to the campus community at no cost. The second section is devoted to materials listed on inventories of researchers who have indicated that they are willing to share; consequently, should a researcher need a chemical that is not kept in the program storage room, the program may be able to obtain the chemical from the existing stocks of other researchers on the campus (UCR – EH&S 2010).

Spill Prevention, Control, & Countermeasures Plan

As described in the 2005 LRDP EIR, in accordance with the regulatory requirements of Title 40 of the Code of Federal Regulations (CFR) Part 112, a Spill Prevention, Control, and Countermeasures (SPCC) Plan has been prepared for UCR. The objectives of the plan are to help define the spill prevention, control, and countermeasures to be implemented by UCR in the event spills from oil storage containers and tanks occur on the campus. The SPCC Plan addresses the following topics:

- Inspections and Records—Requires annual mechanical and electrical inspections, weekly tank containment inspections, and annual SPCC Plan compliance inspections. All records of tank inspections, tank information, facility diagrams, SPCC Plan updates, and any other information that is a part of this plan are regularly updated and maintained in the UCR EH&S office for a period of at least three years.

- Facility Drainage—defines the drainage pattern for the different portions of the campus and the receiving water body, and develops a worst-case scenario regarding potential spills.

- Bulk Storage Tanks—provides a summary of the campus' storage tanks and containers.

- Personnel Training and Spill Prevention Procedures—Addresses plant personnel training regarding proper procedures for tank filling, product dispensing, and spill prevention and cleanup.

- Bulk Liquid Transfer Operations—Provides procedures for tank filling and product dispensing, and loading dock operations.

- Security—Addresses lighting and campus security, and provides security measures regarding gates and fences, fuel dispensers, and protection from vehicles.

The plan requires an annual review and update by a SPCC "Designated Person" to ensure that all the requirements within the plan are achieved. The designated person is the Director of the Environmental Health & Safety (EH&S) Office. The EH&S building contains an emergency hazardous material response truck equipped with appropriate personal protective equipment, self-contained breathing apparatus, hazardous material storage receptacles, absorbent booms, pads, and vermiculite (an absorbent powder) that could be deployed during spillage incidents (UCR – EH&S 2010).

Environmental Health and Safety Facility

UCR EH&S operates a facility that is located in the southernmost part of the East Campus, at the intersection of South Campus Drive and East Campus Drive and adjacent to the east side of the I-215 freeway. The facility provides for the treatment and short-term storage of hazardous, radioactive, and mixed waste generated on the campus. The facility houses radioactive waste activities, including waste handling, storage, compaction, solidification, and decontamination. It also contains the chemical waste preparation and storage areas and administrative offices. The facility consists of four buildings and five modular storage units with adjacent parking and loading areas. Access is from South Campus Drive. As noted earlier, as a separate project, UCR is preparing an EIR to evaluate the environmental effects from the relocation of the EH&S operations into a new larger, state of the art facility.

4.7.2.3 Groundwater Conditions

The campus overlies the Riverside II Groundwater sub basin of the larger Upper Santa Ana River Groundwater Basin, which underlies the entire Riverside area. Measured depth to groundwater on campus is anticipated to range from 60 to 200 feet below grade, with flow in a generally westerly direction. Although there is no groundwater contamination within the campus known to UCR, the extent to which groundwater quality may have been affected by historic activities is unknown. The campus is not identified as a significant groundwater recharge area (UCR – EH&S 2010).

4.7.2.4 Hazardous Materials Transportation

UCR contracts with licensed hazardous waste transporters to ensure that all hazardous wastes generated on the campus are transported off site for treatment or disposal at licensed hazardous waste facilities. Hazardous materials are routinely transported by truck or rail. The U.S. Department of Transportation

(USDOT), Office of Hazardous Materials Safety, prescribes strict regulations for the safe transportation of hazardous materials, as outlined in Title 49 of the Code of Federal Regulations in California. The California Highway Patrol (CHP) has the primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies. Specifically, Section 31303 of the California Vehicle Code requires that when hazardous materials are transported on state or interstate highways, the highway(s) that offer the shortest overall transit time possible shall be used. With the exception of high-level radioactive wastes and certain poisons and explosives, all other hazardous materials may be transported by common carrier on any street within and adjacent to the campus to deliver or remove such materials to and from the campus and other businesses in the area. Through-transport is not allowed, however. Transportation of hazardous materials along any city or state roadway or rail lines within or near the campus is subject to all relevant USDOT, CHP, and California Department of Health Services (DHS) hazardous materials 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 (UCR – EH&S 2010).

4.7.2.5 Hazardous Materials Emergency Response

The City of Riverside Fire Department (RFD) provides fire response services to the campus. The RFD also provides hazardous materials incident emergency response services as backup to UCR Emergency Hazardous Response. UCR is required to include an inventory of hazardous chemical materials stored on campus when it files its Business Plan and updates with the RFD. EH&S has also developed an Emergency Response Plan that covers a broad range of emergency situations related to both human-made and natural disasters and works with the RFD to continually review and update policies and procedures to ensure a coordinated approach to hazardous materials incident planning and response (UCR – EH&S 2010).

4.7.3 REGULATORY FRAMEWORK

The management of hazardous materials and hazardous wastes, including chemicals, radioactive materials, and biohazardous materials, is subject to numerous laws and regulations at all levels of government. These laws apply to instructional and research activities, operations and maintenance work, and other activities on campus. Summaries of federal and state laws and regulations related to hazardous materials management are presented below. California state law allows for certain hazardous materials regulatory programs, including those pertaining to USTs, hazardous materials storage, and hazardous materials management, to be delegated to local agencies. State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event

that such materials are accidentally released, to prevent or to mitigate injury to health or the environment (UCR – EH&S 2010).

Primary federal agencies with responsibility for hazardous materials management include the Environmental Protection Agency (EPA), Department of Labor (Federal Occupational Health and Safety Administration [OSHA]), DOT, and Nuclear Regulatory Commission (NRC).

Primary state agencies with jurisdiction over hazardous chemical materials management are the Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board (RWQCB). Other state agencies involved in hazardous materials management are Cal/OSHA, the Department of Industrial Relations (state OSHA implementation), State Office of Emergency Services (OES—California Accidental Release Prevention implementation), California Department of Fish and Game (CDFG), California Air Resources Board (CARB), California Highway Patrol (CHP), State Office of Environmental Health Hazard Assessment (OEHHA—Proposition 65 implementation) and California Integrated Waste Management Board (CIWMB) (UCR – EH&S 2010).

The primary local agency, known as the Certified Unified Program Agency (CUPA), with responsibility for implementing federal and state laws and regulations pertaining to hazardous materials management is Riverside County Environmental Health Department, Hazardous Materials Unit. The Unified Program is the consolidation of six state environmental regulatory programs into one program under the authority of a CUPA. A CUPA is a local agency that has been certified by Cal EPA to implement the six state environmental programs within the local agency's jurisdiction. A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. The City of Riverside Fire Department maintains a special program that regulates hazardous materials through disclosure and risk management plans as well as above ground storage tank referral in cooperation with the County of Riverside. Thus, the City of Riverside Fire Department is a PA with Riverside County Environmental Health Department, Hazardous Materials Unit as the CUPA (UCR – EH&S 2010).

4.7.3.1 Medical Waste/Biohazardous Materials Regulations

As described in the 2005 LRDP EIR, the United States Department of Health and Human Services (USDHHS), Centers for Disease Control and Prevention, and National Institutes of Health prescribe containment and handling principles for use in microbiological, biomedical, and animal laboratories. The California Department of Health Services Medical Waste Management Program enforces the Medical Waste Management Act and related regulations. All UCR laboratories follow the mandated hygienic practices. Based on the potential for transmitting biological agents and the rate of transmission of these

agents, and based on the quality and concentrations of biological agents produced at a laboratory, Biosafety Levels are defined for four tiers of relative hazards. Federal and state laws, such as the Animal Welfare Act, specify standards for recordkeeping and the registration, handling, care, treatment, and transportation of animals. Such laws are enforced by the U.S. Department of Agriculture and DHS. Further, UCR policies for monitoring, routine inspection, reporting, and waste management have been developed to reduce potential community and worker exposure to hazards associated with the use of animals in research. Animal parts, tissues, or fluids suspected of containing an infectious agent must be managed as a biohazardous waste, as defined in California Health and Safety Code Section 117635. The management of biohazardous wastes generated by research animals must comply with USDHHS guidelines and DHS regulations pertaining to such materials (UCR – EH&S 2010).

4.7.3.2 Radioactive Materials Regulations

The Radiologic Health Branch of the California Department of Health Services administers the federal Atomic Energy Act, the California Radiation Control Law, and related regulations, which govern the receipt, storage, use, transportation, and disposal of sources of ionizing radiation (radioactive material) and provide for protecting the users of these materials and the general public from radiation hazards. The Atomic Energy Act (42 U.S.C. Sections 2011 through 2259) (AEA) ensures the proper management of source, special nuclear, and byproduct material. The AEA and the statutes that amended it delegate the control of nuclear energy primarily to the Department of Energy, the Nuclear Regulatory Commission, and the Environmental Protection Agency (EPA). The California Radiation Control Law (California Health & Safety Code Sections 114960 through 114985) is a regulatory program designed to provide for compatibility with the standards and regulatory programs of the federal government and integrate an effective system of regulation within the state. The program regulates sources of ionizing radiation and establishes procedures for performance of certain regulatory responsibilities with respect to the use and regulation of radiation sources. These laws and regulations govern the receipt, storage, use, transportation, and disposal of sources of ionizing radiation (radioactive material) and protect the users of these materials and the general public from radiation hazards (UCR – EH&S 2010).

The use of radioactive materials on campus is specifically subject to the conditions of a Broadscope Radioactive Materials License issued and administered by the Radiation Safety Program of EH&S. All radiation producing machines must be registered with the California Department of Health, Radiological Health Branch and individuals planning to use radioactive materials must apply for an authorization from EH&S. Broadscope licensing requirements include routine inspection and monitoring of areas where radioactive materials are used to ensure that surfaces are not contaminated with radioactivity above background levels. Under the Broadscope license, renovation or demolition of facilities using

radioactive material requires radiation testing and conducting decontamination and waste handling activities in accordance with applicable regulations (UCR – EH&S 2010).

4.7.3.3 Operational and Disposal Regulations

Worker Safety

The California Occupational Safety and Health Administration (Cal/OSHA) and the federal Occupational Safety and Health Administration (Fed/OSHA) are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. In California, Cal/OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices (UCR – EH&S 2010).

Hazardous Waste Handling

The California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the Resource Conservation and Recovery Act (RCRA) and the California Hazardous Waste Control Law. Both laws impose "cradle to grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment (UCR – EH&S 2010).

Asbestos Regulations

Asbestos is regulated as a hazardous air pollutant under the Clean Air Act and is, therefore, subject to regulation by the South Coast Air Quality Management District under its Rule 1403. Asbestos is also regulated as a potential worker safety hazard under the authority of the U.S. Occupational Safety and Health Administration (OSHA) and Cal/OSHA. These rules and regulations prohibit emissions of asbestos from asbestos-related demolition or construction activities, require medical examinations and monitoring of employees engaged in activities that could disturb asbestos, specify precautions and safe work practices that must be followed to minimize the potential for release of asbestos fibers, and require notice to federal and local government agencies prior to beginning renovation or demolition that could disturb asbestos (UCR – EH&S 2010).

Lead Regulations

Because of its toxic properties, lead is regulated as a hazardous material. Lead is also regulated as a toxic air contaminant (TAC). State-certified contractors must perform inspection, testing, and removal (abatement) of lead-containing building materials in compliance with applicable health and safety and

hazardous materials regulations. The Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X) requires disclosures of the presence of lead paint in residential structures (UCR - EH&S 2010).

Hazardous Materials Transportation

The USDOT regulates hazardous materials transportation between states. The state agency with primary responsibility in California for enforcing federal and state regulations and responding to hazardous materials transportation emergencies is the CHP. Together, these agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roads (UCR - EH&S 2010).

Hazardous Materials Emergency Response

California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local government and private entities. Response to hazardous materials incidents is one component of this plan. The State Office of Emergency Services administers the plan, which coordinates the responses of other agencies, including Cal-EPA, CHP, Department of Fish and Game, the Regional Water Quality Control Board (RWQCB), and the Radiologic Health Branch of the DHS. EH&S will continue to implement the plan at UCR, in cooperation with the RFD (UCR - EH&S 2010).

4.7.3.4 Local Regulations

As described in the 2005 LRDP EIR, the City and County of Riverside are required to comply with federal and State laws and regulations pertaining to hazardous materials management, including, but not limited to, Articles 79 and 80 of the Uniform Fire Code and applicable hazardous materials management requirements set forth in the Uniform Building Code (with California Amendments). Various departments and divisions within the City and County are responsible for monitoring and enforcement of such activities as hazardous materials storage (Business Plan), hazardous waste management, underground storage tank operation and removal, and fire prevention and emergency response (UCR - EH&S 2010).

The California Health and Safety Code grants discretionary authority to the local agency—typically the local CUPA—with oversight responsibilities to determine the need for preparation of a Risk Management Plan (RMP) pursuant to Health and Safety Code Section 25534(a). For facilities not previously subject to RMP requirements, but for which an RMP must be prepared, the RMP must be submitted in accordance with a schedule established by the administering agency after consultation with the stationary source (UCR - EH&S 2010).

4.7.4 IMPACTS AND MITIGATION MEASURES

4.7.4.1 Significance Criteria

The impacts on hydrology and water quality from the implementation of the 2005 LRDP Amendment 2 would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- 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.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.
- 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 create a significant hazard to the public or the environment.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area.
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

4.7.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the proposed project and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR.

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

While the proposed SOM, relocated parking garages, and remaining West Campus open space would handle hazardous materials and generate hazardous waste, they are not located within 0.25 mile of an

existing or proposed school. Although the Campus Reserve site that is proposed for housing in the 2005 LRDP Amendment 2 is located within 0.25 mile of an existing or proposed school, the maintenance and upkeep of residential and open space areas on the Campus Reserve site would not involve substantial amounts of hazardous materials and future development on the site would comply with federal, state, and local regulations pertaining to hazardous wastes, as well as with existing campus programs and practices, such as PP 4.7-1. The remaining elements of the proposed 2005 LRDP Amendment 2 are programmatic in nature and would not handle hazardous materials and generate hazardous waste within 0.25 mile of an existing or proposed school. The impact from campus growth under the 2005 LRDP related to this issue was evaluated in the 2005 LRDP EIR (Impact 4.7-5). That analysis showed that although there are six existing schools within 0.25 mile of the campus boundary, compliance with federal, state, and local regulations and the implementation of PP 4.7-1 would ensure that risks associated with hazardous emissions or materials to existing or proposed schools would be eliminated or reduced. Furthermore, as the analysis in **Section 4.3, Air Quality,** shows, campus development under the amended 2005 LRDP would not result in off-campus human health risk impacts. Therefore, implementation of the amended 2005 LRDP would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school in a manner that results in an adverse impact, and this impact would be less than significant.

- 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 create a significant hazard to the public or the environment.

Elements of the proposed 2005 LRDP Amendment 2 are situated on lands north of MLK. These sites are located north of known or suspected contamination sites identified south of MLK. There are no other areas on the campus that are on the Cortese list. Thus, implementation of the amended 2005 LRDP would not create a significant hazard to the public or the environment, and this impact would be less than significant.

- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area.

- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area.

The closest airports to the UCR campus are Flabob Airport, which is located approximately 4 miles to the west, and March Air Reserve Base, which is located approximately 6 miles to the southeast. Lands associated with the proposed 2005 LRDP Amendment 2, including the *SOM* site, the sites of the two relocated parking structures, land designated for West Campus open space, and the Campus Reserve site,

are not located within 2 miles of a public airport, public use airport, or a private airstrip and are not included within the airport land use plan for either the Flabob Airport or the March Air Reserve Base. As a result, implementation of the proposed amendment to the 2005 LRDP would not result in a safety hazard for people residing or working in the project area. No impact would occur. In addition, there have been no changes in circumstances since the certification of the 2005 LRDP EIR relative to this criterion that could alter the conclusions of the previous analysis. Therefore, no further analysis of this issue is required.

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

The construction of facilities associated with the proposed 2005 LRDP Amendment 2 could result in lane or roadway closures. In addition, future development could affect areas that are currently identified as emergency assembly areas. Implementation of future development under the amended 2005 LRDP would be guided by a range of LRDP planning strategies, including Transportation 4, and would continue existing campus programs and practices, such as PP 4.7-7(a) and (b). In addition, future development on the campus would require the implementation of LRDP mitigation measures MM 4.7-7(a) and (b) which require the siting of construction staging area to avoid designated evacuation zones and require that the Campus Emergency Operations Plan be updated as appropriate to account for new on-campus development, which may require that the locations for Campus Evacuation Zones be revised. Thus, implementation of the amended 2005 LRDP would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, and the impact would be reduced to a less than significant level with the implementation of mitigation measures previously adopted by the University in conjunction with its adoption of the 2005 LRDP. Furthermore, there have been no changes in circumstances since the certification of the 2005 LRDP EIR relative to this criterion that could alter the conclusions of the previous analysis. Therefore, no further analysis of this issue is required.

- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Lands associated with the proposed 2005 LRDP Amendment 2, including the *SOM* site, the sites of the two relocated parking structures, land designated for West Campus open space, and the Campus Reserve site, are not located in a Fire Hazard Zone on the maps prepared by Cal Fire. Therefore, implementation of the amended 2005 LRDP would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where

residences are intermixed with wildlands, and no impact would occur. No further analysis of this issue is required.

4.7.4.3 Methodology

To determine whether implementation of the proposed 2005 LRDP Amendment 2 would result in additional hazards related to the use, storage, transport, or release of hazardous materials, the potential for new development on the campus to result in an increase in the use of hazardous materials was identified.

4.7.4.4 Project Impacts and Mitigation Measures

Impact 4.7-1 **Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would not expose campus occupants or the nearby public to significant hazards, due to the routine transport, use, disposal, or storage of hazardous materials (including chemical and radioactive waste). The impact would be less than significant.**

The proposed 2005 LRDP Amendment 2 would facilitate the establishment of a new SOM on the West Campus. The operation of the proposed SOM would involve the use of hazardous materials in clinical activities, laboratory research, and building and grounds maintenance. These hazardous materials may include inorganic and organic chemicals, chemical reagents and reaction products, solvents, mercury, radioisotopes, biohazardous materials, fuels, oils, paints, cleansers, and pesticides. Operation of the relocated parking garages, the West Campus open space, and housing and open space on the Campus Reserve site, would also involve use of hazardous materials for building and grounds maintenance, but to a lesser degree. The remaining elements of the proposed amendment to the 2005 LRDP would not involve the routine transport, use, or disposal of hazardous materials.

Programs and activities that have the potential to handle or use hazardous materials on the campus are summarized below.

- General Campus Research – A variety of research programs would occur with the development of the West Campus under the current 2005 LRDP. The growth in research activities would increase the types of activities that use, handle, and dispose of hazardous materials.
- College of Natural and Agricultural Sciences – A major portion of the campus will continue to be reserved for agricultural teaching and research, including the land on the West Campus south of MLK. Agricultural operations that require the use, handling, and disposal of hazardous materials could continue in these areas.

- School of Medicine – This proposed land use would include instructional and research programs, as well as out-patient medical treatment, which would routinely use, handle, and dispose of hazardous materials, including medical waste.

- Maintenance and Physical Plant – With an increase in on-campus occupied space on the West Campus, expansion of maintenance and cleaning services will be required. This would increase the use, handling, storage, and disposal of products routinely used in building maintenance, some of which may contain hazardous materials.

UCR will continue to use materials, some of which are considered hazardous, during the course of daily operations. These hazardous materials may include inorganic and organic chemicals, chemical reagents and reaction products, solvents, mercury, radioisotopes, biohazards, fuels, oils, paints, cleansers, and pesticides that are currently used in laboratory research, building and grounds maintenance, vehicle maintenance, and fine arts. While the amount and type of hazardous materials may vary over time with the evolution of instruction and research activities and changes or additions to hazardous materials lists, the general range and type of hazardous materials used on campus is not expected to substantially change with implementation of the amended 2005 LRDP, although more medical waste would be generated on the campus as a result of the SOM. The Campus' Environmental Health and Safety Department estimates that the total amount of hazardous wastes of all types generated on campus would increase to approximately 172 tons by 2020/21. This estimate includes the projected increase in School of Medicine-related medical waste that would be handled by EH&S.

Although increased hazardous materials use would generate increased volumes of hazardous wastes, the Campus will continue to implement its hazardous waste minimization program to minimize the amount of waste generated and requiring off-site disposal. With the expectation of a new and expanded EH&S facility, packing and temporary storage operations can be streamlined and take advantage of new technologies. Packaging efficiencies and more temporary storage which will be available with the new space, the amount of waste can be better handled and minimized. Also as the most effective waste minimization occurs at the front end of the process, the enhanced laboratory and classroom teaching spaces will be used to impart sound waste minimization techniques and strategies to the UCR research community.

Existing buildings on the UCR campus will continue to include lead-based paints and asbestos-containing materials, which could be subject to exposure in the event of building maintenance, renovation, or demolition.

The individuals most at risk due to increased hazardous materials use (associated with implementation of the proposed 2005 LRDP Amendment 2) would be staff and students involved in instruction, research and medical activities that involve the use of hazardous materials and construction employees who work

at locations where hazardous materials may be present. The SOM would be located internal to the campus and distant from off-site receptors. Due to compliance with federal, state and local laws and regulations, and the intervening distance between on-campus facilities and the nearest off-campus receptors, risk to off-site receptors from the routine handling of hazardous materials at the SOM, and other campus facilities would be minimal.

Off-site hazardous materials exposure from SOM operations as well as the operation of other campus facilities would only occur under limited circumstances such as an accident during transport. The risks associated with the transport of hazardous materials, both to and from campus and internally, are addressed under **Impact 4.7-2**. Potential impacts resulting from the emission of toxic air contaminants from fume hoods and other sources are addressed under **Impact 4.3-4** in **Section 4.3 (Air Quality)** of this EIR.

Any added demands associated with hazardous materials and waste resulting from implementation of the proposed 2005 LRDP Amendment 2 would be met through modifications of these existing programs and services over time to make sure that they continue to keep the Campus in compliance with the numerous hazardous materials laws and regulations at all levels.

Furthermore, UCR would continue to implement as applicable the following existing campus Program and Practice (PP) related to the transport, use, storage, or disposal of hazardous materials during the planning horizon of the amended 2005 LRDP and is assumed as part of the proposed project.

PP 4.7-1 The Campus shall continue to implement the current (or equivalent) health and safety plans, programs, and practices related to the use, storage, disposal, or transportation of hazardous materials, including, but not necessarily limited to, the Business Plan, the Broadscope Radioactive Materials License, and the following programs: Biosafety, Emergency Management, Environmental Health, Hazardous Materials, Industrial Hygiene and Safety, Laboratory/Research Safety, Radiation Safety, and Integrated Waste Management. These programs may be subject to modification as more stringent standards are developed or if the programs are replaced by other programs that incorporate similar health and safety protection measures.

With continued implementation of PP 4.7-1 which is included in and a part of the amended 2005 LRDP, campus development under the 2005 LRDP as amended by the proposed Amendment 2 would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.7-2 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would increase the amount of hazardous materials used on and transported to and from the campus, but would not expose people to potential health risks in the event of an accident or accidental release. The impact would be less than significant.**

The operation of the proposed SOM would involve the use of hazardous materials during the course of daily operations, thus resulting in the possibility of an accident or accidental release of hazardous materials or wastes. Operation of the relocated parking garages, the West Campus open space, and housing and open space on the Campus Reserve site would involve the use of hazardous materials, but to a lesser degree. The remaining elements of the proposed 2005 LRDP Amendment 2 would not result in an increase in the use or transport of hazardous materials.

During the planning horizon of the proposed 2005 LRDP Amendment 2, continued implementation of PP 4.7-1, described above under **Impact 4.7-1**, as applicable would require that existing campus health and safety plans, programs and practices (or equivalent measures) related to the use, storage, transport or disposal of hazardous materials and wastes be continued. In addition, continued implementation of PP 4.7-3 as applicable would require the implementation of hazardous materials minimization strategies related to research, maintenance, and instructional activities and is assumed as part of the proposed project.

PP 4.7-3 The Campus will inform employees and students of hazardous materials minimization strategies applicable to research, maintenance, and instructional activities, and require the implementation of these strategies where feasible. Strategies include but are not limited to the following:

(i) Maintenance of online database by EH&S of available surplus chemicals retrieved from laboratories to minimize ordering or new chemicals.

(ii) Shifting from chemical usage to micro techniques as standard practice for instruction and research, as better technology becomes available.

The precise increase in the amount of hazardous materials transported to or from the campus as a result of implementation of the 2005 LRDP as amended by the proposed Amendment 2 cannot be definitively predicted due to varying research needs over time, which cannot be anticipated as part of this programmatic document, and potential changes in the classification of hazardous materials. Nonetheless, the following discussion focuses on the nature and magnitude of risks associated with the accidental release of hazardous materials typically used on campus.

Off-Campus Transportation of Hazardous Materials

As discussed in the "Hazardous Materials Transportation" section above, while UCR policies and procedures specifically govern receipt of hazardous materials at UCR, under Title 49 of the Code of Federal Regulations, the USDOT Office of Hazardous Materials Safety prescribes strict regulations for the safe transportation of hazardous materials. Transportation of hazardous materials along any city or state roadways near the campus is also subject to all hazardous materials transportation regulations established by USDOT, CHP, and DHS.

The transportation of hazardous materials can result in accidental spills, leaks, toxic releases, fire, or explosion. However, transport of hazardous materials to and from the campus is handled by licensed vendors who are required by law follow all DOT and CHP hazardous materials transportation regulations, In conformance with legal requirements, incoming radioactive material is typically routed through the EH&S Radiation Safety for monitoring and recording of each acquisition. These practices would continue at the campus under the amended 2005 LRDP.

Under current conditions, campus hazardous wastes are packaged in compliance with federal and state regulations and collected by the Campus EH&S personnel from the labs and other sources on the campus and transported to the existing EH&S facility where they are temporarily stored and then hauled off campus by licensed vendors for reuse, recycle, and disposal. UCR currently ships hazardous chemical waste for disposal approximately every 60 days (six times a year), biohazardous waste once a month, and radioactive waste two times in a year. Therefore, on average, hazardous waste shipments occur on an infrequent basis, barring unusual circumstances such as laboratory demolition.

While the Campus will continue to implement its waste minimization program to reduce the volume of waste requiring off-site disposal, with campus growth the total amount of hazardous waste generated by the campus could potentially increase four-fold by 2020. However, the frequency at which hazardous waste is shipped off campus is not expected to increase proportionally because currently trucks that carry the waste off campus are not loaded to full capacity during each run. **Table 4.7-2, Hazardous Waste Off-Haul** below, presents the projected increase in hazardous waste off-haul trips between existing conditions and 2020-21.

Table 4.7-2
Hazardous Waste Off-Haul

Type of Waste	Frequency of Off-haul (2010-11)	Frequency of Off-haul (2020-21)
Medical Waste Vendor Pick-up	1/month	1/month
Universal & E-waste Waste Vendor Pick-up	6/year	6-8/year
Hazardous Waste Vendor Pick-up	6/year	6-8/year
Radioactive Waste Vendor Pick-up	2/year	2-3/year

Source: UC Riverside 2010

As is currently the practice, manifests would be completed and maintained by EH&S for all hazardous waste that is transported in connection with campus activities. As previously discussed, Section 31303 of the California Vehicle Code requires that when hazardous materials are transported on state or interstate highways, the highway(s) that offer the shortest overall transit time possible shall be used, and as required by federal and state laws, all other all hazardous materials transportation regulations must be followed, such as USDOT regulations for packaging and handling hazardous materials to prevent accidental spills of hazardous materials during transit. Compliance with applicable federal and state laws related to the transportation of hazardous materials will continue to reduce the likelihood and severity of accidents during transport.

On-Campus Transportation of Hazardous Waste

In addition to transport of hazardous materials to and from campus, the transport of hazardous materials also occurs among campus facilities. EH&S picks up hazardous materials from locations on the campus approximately six times a day and transports them to the existing EH&S facility for temporary storage and off-haul (UCR – EH&S 2010). Accidents could occur as these materials are moved about the campus. However, as is current practice, hazardous materials transported between UCR facilities would be carried in break-resistant containers with secondary containment such as buckets or carts. The consequences of spills as a result of a fall or dropping a container would depend on whether the hazardous material was released, the specific hazards associated with the material, the facility design, and the availability of emergency response equipment. However, to reduce the likelihood and severity of accidents during on-campus transit, all applicable federal and state laws and existing campus Programs and Practices, and procedures, as required by PP 4.7-1 discussed above under **Impact 4.7-1**, related to the transportation or cleanup of hazardous materials (in the event of an accidental release) would continue to be implemented. These laws, regulations, Programs and Practices, and procedures include training regarding the handling of hazardous wastes, as well as fully developed emergency response programs as articulated in the

Business Plan and Campus Emergency Response Plan. All EH&S materials management vehicles are supplied with cleanup materials to handle spills occurring during transit on campus. EH&S is not permitted to transport hazardous materials off campus or travel on city streets but is allowed to cross a city street. EH&S would continue to pick up hazardous materials from campus locations and consolidate them at either the existing EH&S facility or a new EH&S facility for temporary storage and off-haul, and would continue to comply with all applicable federal and state laws and campus PPs related to transport of hazardous materials.

Hazardous Materials Storage

Most hazardous materials stored on campus present little risk of upset. Hazardous waste is stored in laboratories (in designated Satellite Accumulation Areas), which are emptied and cleaned on a regular basis, and in a secure EH&S storage facility that includes a 90-Day Room for chemical waste and areas designed to prevent accidental release to the environment. This facility, located in the EH&S building, has been designed pursuant to California Building Code requirements to safely accommodate materials that present a moderate explosion hazard (B-2), high fire or physical hazard (B-3), or health hazards (B-7). Should a new EH&S facility be constructed on the campus, the new facility will also be designed pursuant to the state building code requirements and constructed in a manner that minimizes the potential for an accidental release to the environment.

Hazardous materials for research and academic use are generally stored in laboratories in small, individual containers. In the unlikely event of an accidental release, these small storage volumes limit potential consequences to the individual laboratory in which they are stored. Compliance with all applicable federal and state laws and existing campus Programs and Practices, and procedures (as required by PP 4.7-1) related to the storage of hazardous materials would continue to be implemented to maximize containment and to provide for prompt and effective clean-up if an accidental release occurs.

Hazardous Materials Use

Hazardous materials use would present a slightly greater risk of accident than hazardous materials storage. However, for those employees and students that work with hazardous materials, such as researchers and/or medical personnel, the amount of hazardous materials that are handled at any one time is relatively small, minimizing the potential consequences of an accident during handling. This would be true for the SOM as well. Further, UCR would continue to comply with federal and state laws and existing campus Programs and Practices, and procedures to eliminate or reduce the consequence of hazardous materials accidents. For example, staff and students who work around hazardous chemicals, biohazardous materials, and/or laboratory animals would continue to wear appropriate protective

equipment and safety equipment would be available in all areas where hazardous materials are used. In addition, all persons who handle hazardous waste on campus would be required to attend a hazardous waste class on an annual basis.

The UCR Business Plan, which is administered by the City of Riverside Fire Department (RFD), provides information about the location of campus buildings in which hazardous materials are handled, provide site maps indicating the location of hazardous materials and wastes, assign a particular chemical classification to each laboratory/shop, and include emergency procedures to follow in the event of an accidental release of hazardous materials. This information would be provided to the RFD along with periodic updates on any inventory changes at the campus.

Major hazardous materials accidents are infrequent and additional emergency response capabilities are not anticipated to be necessary to respond to the potential incremental increase in the number of incidents that could result from implementation of the amended 2005 LRDP.

Conclusion

With continued implementation of PP 4.7-1 (or equivalent measures) and PP 4.7-3 which are included in and a part of the amended 2005 LRDP, and continued compliance with federal and state health and safety laws and regulations, implementation of the 2005 LRDP as amended by the proposed Amendment 2 would not 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, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

4.7.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative impacts from hazardous materials use, transport, and disposal is the City of Riverside, unless otherwise specified. The analysis accounts for all anticipated cumulative growth within this geographic area, as represented by full implementation of the City of Riverside General Plan.

Impact 4.7-3 **Cumulative development, including campus development under the proposed 2005 LRDP Amendment 2, would not expose the public to significant hazards due to the transport, use, disposal, or storage of hazardous materials (including chemical and radioactive waste) under routine and upset conditions. The cumulative impact would be less than significant.**

As described in **Impacts 4.7-1** and **4.7-2** above, project-related impacts from the routine use, transport, or disposal of hazardous materials, or as a result of accidental release of hazardous materials would be less than significant. While the UCR campus will continue to use varying amounts and types of hazardous materials (including chemical and bio-hazardous materials) in day-to-day activities and operations, the Campus will continue to comply with all applicable laws and regulations concerning the use, storage, transportation, and/or exposure of hazardous materials, as well as with existing Programs and Practices, as required by PP 4.7-1, to reduce potential impacts of each project constructed on the campus under the amended 2005 LRDP.

With respect to future growth in the Riverside area, it is reasonable to assume that the growth will result in an incremental increase in the amount of hazardous materials used, treated, transported, and disposed area-wide, which could create a hazard to the public and increase the potential for an accident to occur. However, while each development site has potentially unique hazardous materials considerations, all future growth will comply with federal, state, and local hazardous materials statutes and regulations, as enforced by appropriate regulatory agencies. These statutes and regulations have been designed to ensure that both project-specific and cumulative impacts resulting from the use, transport, and disposal of hazardous materials, or risk of upset from a release of hazardous materials, would not be significant. Therefore the proposed project, in conjunction with past, present and reasonably foreseeable future growth in the Riverside area, would not result in a significant cumulative impact related to hazardous materials transport, use, disposal and storage under both routine and upset conditions.

Mitigation Measures: No mitigation is required.

4.7.5 REFERENCES

California Health and Safety Code, Section 25124.

California Health and Safety Code, Section 117635.

California Vehicle Code, Section 31303.

Code of Federal Regulations, Title 49, Sections 171 to 180.

University of California, Riverside (UCR). 2005. Long Range Development Plan Final Environmental Impact Report. SCH No. 2005041164.

UCR Environmental Health and Safety. 2010. E-mail communication between Vernon Russell, Director of EH&S, and Tricia Thatcher, University of California, Riverside, December 17.

4.8 HYDROLOGY AND WATER QUALITY

4.8.1 INTRODUCTION

This section describes the existing hydrology and water quality conditions on the UCR campus and analyzes the potential for implementation of the proposed 2005 LRDP Amendment 2 to deplete groundwater supplies or interfere with groundwater recharge.

The information in this section is based upon information provided by the Santa Ana River Basin Water Quality Control Plan, the Federal Emergency Management Agency, and previous environmental documentation prepared for the UCR campus.

In response to the Notice of Preparation (NOP) issued for this EIR, Caltrans stated in its letter that all campus areas that would discharge into I-215 drainage facilities must be identified and analyzed in a project hydrology study, and that basin calculations should be provided for any on-site drainage basins planned as part of the proposed project. As the proposed project is an amendment of the campus's LRDP (and not a specific development project), a programmatic analysis of campus development over the next 9 to 10 years is provided in this program EIR. If and when a specific campus project is proposed that would discharge into I-215 drainage facilities, a project-specific CEQA document will be prepared, if needed, and the type of analysis requested by Caltrans will be completed.

In its comments on the NOP, the City of Riverside stated that the proposed project should implement and maintain appropriate construction and post-construction best management practices to minimize pollutant loads in urban runoff and comply with all federal and state regulations related to water quality. This EIR section presents information on federal and state regulations related to water quality. As stated in the Initial Study that was published with the NOP and summarized in **Section 4.8.3.1** below, campus development under the 2005 LRDP as amended by the proposed Amendment 2 would comply with National Pollutant Discharge Elimination System (NPDES) Phase I construction requirements and all new facilities would be incorporated into the campus stormwater management plan as required by NPDES Phase II requirements. To reduce the amount of pollutants in the runoff, future development associated with the proposed Amendment 2 to the 2005 LRDP would be guided by campus programs and practices for the control of stormwater. Therefore, implementation of the amended 2005 LRDP would not violate any water quality standards.

4.8.2 EXISTING CONDITIONS

4.8.2.1 Regional Hydrology

Surface Water

As described in the 2005 LRDP EIR, the UCR campus is located within the Santa Ana River watershed, a drainage area of approximately 2,650 square miles. The Santa Ana River begins as a series of tributary streams in the San Bernardino Mountains and flows over 100 miles southwesterly, discharging into the Pacific Ocean in Huntington Beach. Surface and groundwater from the Upper Santa Ana River basin collect behind the Prado Dam, at the head of the Santa Ana River Canyon, and then continue to the Lower Santa Ana River basin to the Pacific Ocean (UCR 2005).

Natural flows in the river and tributaries are supplemented by water imported from the State Water Project and the Colorado River, and discharge from publicly owned treatment works (POTWs). The use of imported water and discharge from POTWs has increased as a result of increased population in the Upper Santa Ana River Basin. Between 1970 and 1990, the total average volume rose from less than 50,000 to over 130,000 acre-feet per year (AFY), as measured at Prado Dam. Base flow is expected to rise to 230,000 AFY by 2020, a projected increase of 77 percent above 1990 levels (UCR 2005).

Groundwater

The Riverside area is located within the Upper Santa Ana Valley Groundwater Basin. The UCR campus is located near the southeastern edge of the Riverside-Arlington subbasin, which is bound by impermeable rocks of Box Springs Mountains on the southeast, Arlington Mountain on the south, La Sierra Heights and Mount Rubidoux on the northwest, and the Jurupa Mountains on the north. The northeast boundary of this subbasin is formed by the Rialto-Colton Fault, and a portion of the northern boundary is a groundwater divide beneath the City of Bloomington. The Santa Ana River flows over the northern portion of the subbasin. Groundwater in the subbasin is replenished by infiltration from Santa Ana River flow, underflow past the Rialto-Colton Fault, intermittent underflow from the Chino groundwater subbasin, return irrigation flow, and deep percolation of precipitation (UCR 2005).

Groundwater may also be contained in isolated perched water tables that are separated from the regional aquifer by unsaturated rock. Based on historical well data in the vicinity, it is estimated that groundwater depths vary throughout the campus, from approximately 60 feet below the ground surface at the base of the Box Springs Mountains, to 200 feet below ground surface in the flat western portion of the campus.

Groundwater in the regional aquifer is pumped by local water agencies, including the City of Riverside, and used for domestic and agricultural purposes.

The Soil Conservation Service classifies soils into four classes, based on their relative permeability. Class A soil types represent the most permeable soil types, Class B and C are intermediate, and Class D soils are the least permeable. In general, the East Campus is underlain with Class C and D soils, which have intermediate to low permeability, and the West Campus is underlain with Class C soils, with intermediate permeability. Therefore, the campus is not considered a significant regional groundwater recharge area (UCR 2005).

4.8.2.2 Campus Hydrology

UCR is located on westward sloping alluvial deposits at the base of the Box Springs Mountains in the Upper Santa Ana River Watershed. The campus is located within two sub-watersheds, generally divided by the I-215/SR-60 freeway. Most of the East Campus drains to the University Arroyo Watershed, while portions of the West Campus drain to the Box Springs Arroyo Watershed. Campus arroyos and major storm drainages are shown in **Figure 4.8-1, Major Storm Drainages on Campus**, and areas subject to 100-year flooding are shown in **Figure 4.8-2, Federal Emergency Management Agency Map**. It should be noted that UCR is located within the Riverside County Flood Control and Water Conservation District's Master Drainage Plans for the Box Springs and University areas. When fully implemented, the Master Drainage Plan facilities will relieve areas of flooding and provide adequate drainage outlets in those areas. For details regarding the East Campus hydrology, please see 2005 LRDP EIR, **Section 4.8, Hydrology and Water Quality**. The West Campus hydrology is summarized below.

West Campus

Runoff in the Box Springs Arroyo is controlled by the Box Springs dam, an earth-filled flood control dam located east of the campus that controls runoff from approximately 2,500 acres of upstream area. Flow in the arroyo is piped underneath Canyon Crest Drive and is discharged into the natural channel, a flat, broad, and dry wash on campus. As the arroyo continues westward, it has been subjected to substantial modification and is basically a shallow grassy swale. As the arroyo continues west, flows are contained within an incised channel bordered by eucalyptus trees and enter a 54-inch pipe that restricts downstream flows conveyed under Chicago Avenue (and results in higher flows being retained within the incised channel upstream). The Box Springs Arroyo is also interrupted by the Gage Canal, where flows are piped underground for a short stretch (UCR 2005).

The portion of the West Campus north of Martin Luther King Jr. Boulevard (MLK) drains predominantly via surface flow in a southwesterly direction, entering an existing 42-inch storm drain on MLK (beginning approximately 200 feet west of the Gage Canal) and proceeding westerly to the Kansas Avenue detention basin. Flows enter the 66-inch City storm drain on Cranford Avenue at the northern edge of the West Campus (UCR 2005).

4.8.2.3 Groundwater Quality

As noted above, the Riverside area is located within the Upper Santa Ana Valley Groundwater Basin, and the UCR campus is located near the southeastern edge of the Riverside-Arlington subbasin. Groundwater quality in the Riverside-Arlington subbasin has an average total dissolved solid content of 463 milligrams per liter (mg/L) with a range of 210 to 889 mg/L (State of California 2003). High total dissolved solids (TDS) levels are commonly referred to as "hard" water, which contributes to the formation of calcium and other deposits on shower walls and other surfaces regularly exposed to water. High TDS levels begin to interfere with the use of water between 500 and 1,000 mg/L. At 1,000 mg/L, water is considered brackish and unusable (UCR 2005).

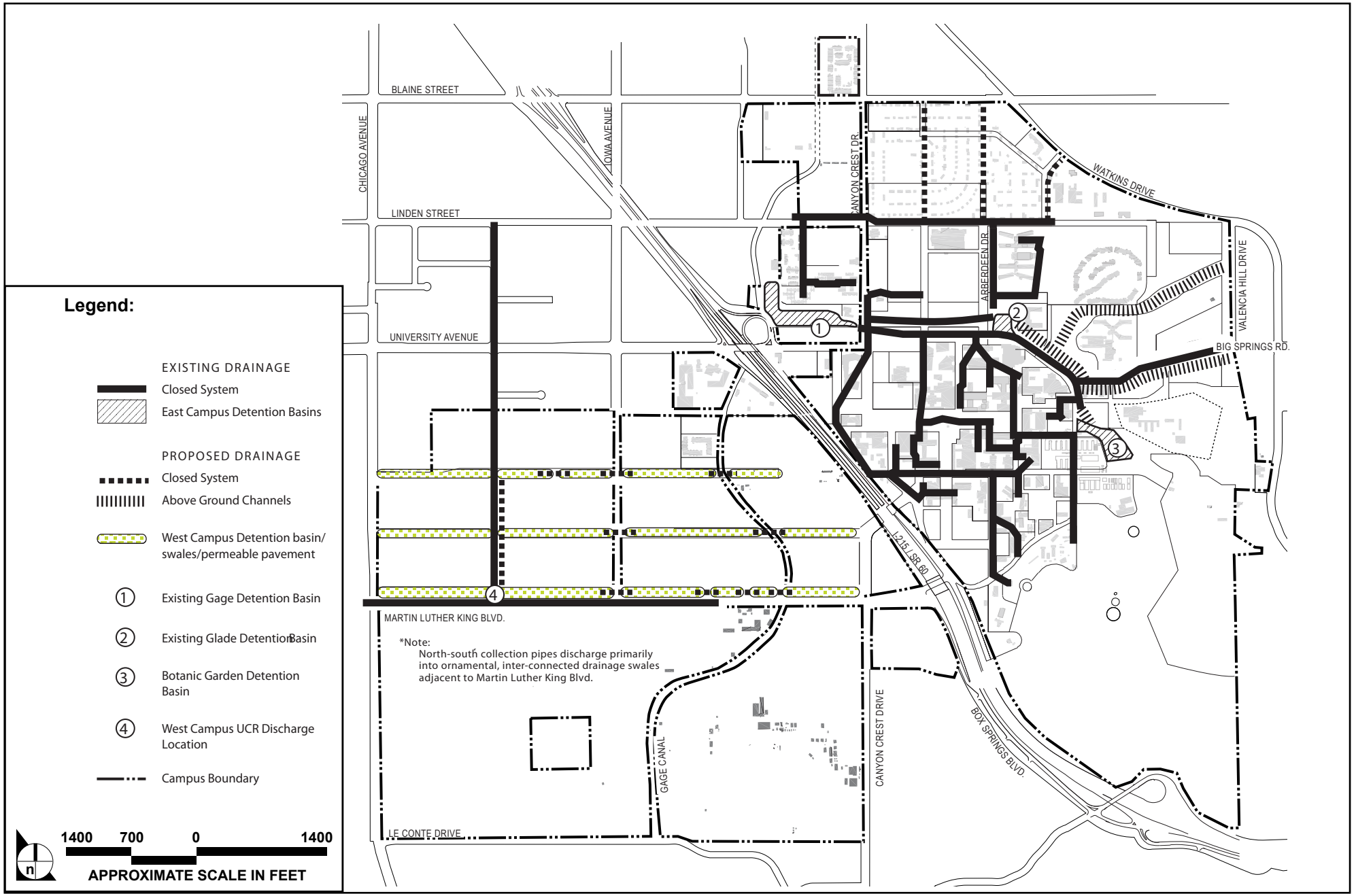
The use of chemicals and solvents in industrial processes and the use of fertilizers, pesticides, and herbicides in agricultural operations have been noted as a source of concern with respect to groundwater quality in the Riverside area. Currently, the City of Riverside extracts groundwater for domestic uses and operates five treatment plants that remove: trichloroethylene (TCE) which is a degreaser/cleaner used in industry; perchlorate which is a primary ingredient of solid rocket propellants and other industrial applications; and dibromochloropropane (DBCP) which is a banned pesticide previously used on citrus groves. Historic use of fertilizers may also contribute to elevated nitrate levels in groundwater (UCR 2005). Nitrates in groundwater extracted by the City of Riverside have an average nitrate concentration of 25 parts per million (ppm), with a range from 21 ppm to 30 ppm during the year, well below the maximum contaminant level for nitrate of 45 ppm established by the California Department of Health Services (DHS) (City of Riverside 2009).

4.8.3 REGULATORY FRAMEWORK

4.8.3.1 Federal

Clean Water Act

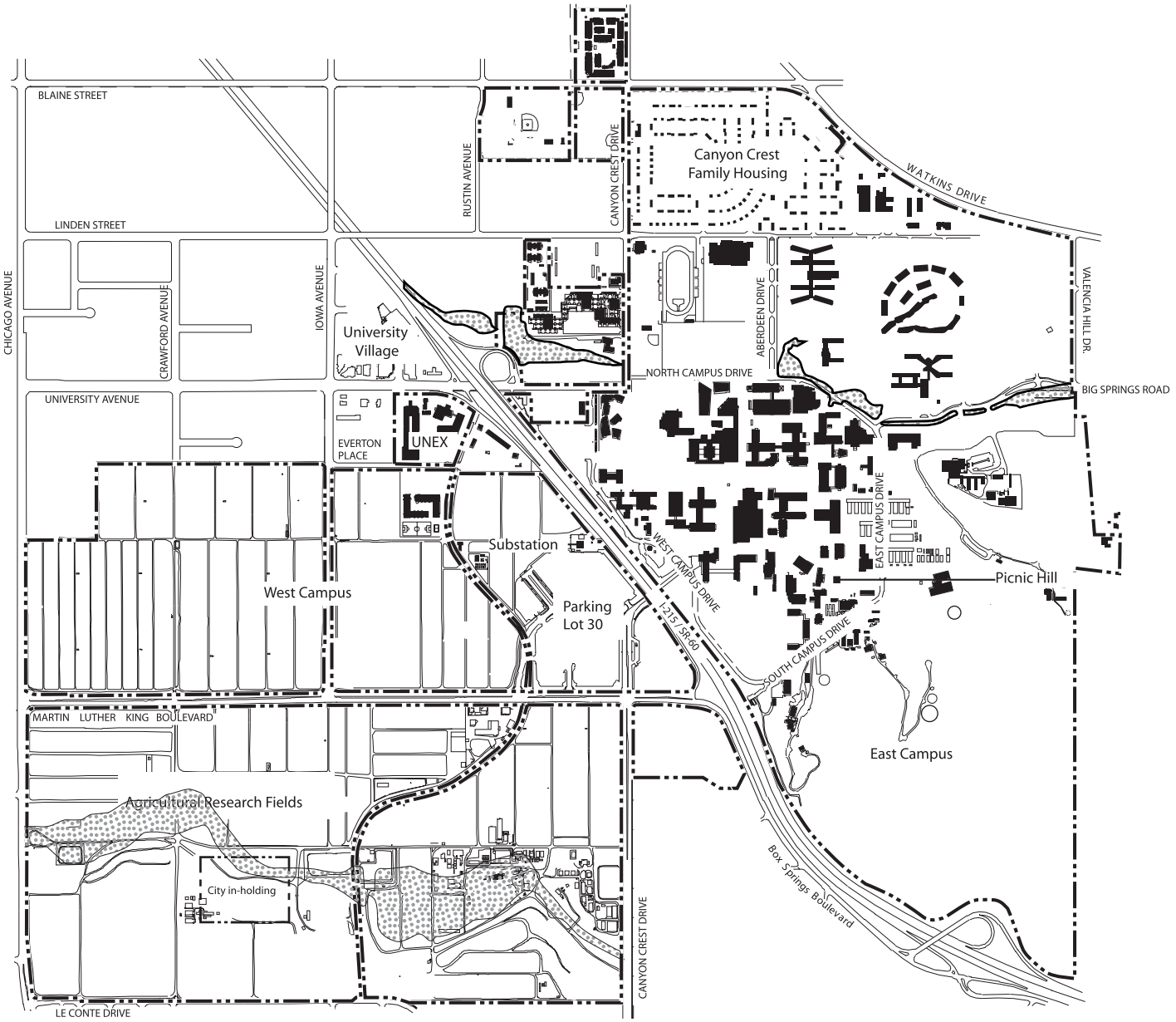
In 1972, the Federal Water Pollution Control Act—also known as and hereafter referred to as the Clean Water Act (CWA)—was amended to require NPDES permits for discharge of pollutants into the "waters of the United States" that include oceans, bays, rivers, streams, lakes, ponds, and wetlands from any point source. In 1987, the CWA was amended to require that the US EPA establish regulations for permitting under the NPDES permit program of municipal and industrial storm water discharges. The US EPA published final regulations regarding storm water discharges on November 16, 1990. The regulations require that municipal separate storm sewer system (MS4) discharges to surface waters be regulated by an NPDES permit. The Campus has submitted a campus-wide MS4 permit application to the Santa Ana Regional Water Quality Control Board (RWQCB) but the Board has not considered it for approval yet.



SOURCE: UCR 2005 LRDP Amendment 2 – 2011

FIGURE **4.8-1**

Major Storm Drainages on Campus



SOURCE: EIP Associates – November 2005

FIGURE **4.8-2**

Federal Emergency Management Agency Map

In addition, the CWA requires the states to adopt water quality standards for water bodies and have those standards approved by the US EPA. Water quality standards consist of designated beneficial uses—e.g., wildlife habitat, agricultural supply, fishing, etc.—for a particular water body, along with water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations or levels of constituents—such as lead, suspended sediment, and fecal coliform bacteria—or narrative statements that represent the quality of water that supports a particular use. Because California has not established a complete list of acceptable water quality criteria, the US EPA established numeric water quality criteria for certain toxic constituents in the form of the California Toxics Rule (40 CFR 131.38).

Water bodies not meeting water quality standards are deemed "impaired" and, under CWA Section 303(d), are placed on a list of impaired waters for which a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body may receive without exceeding applicable water quality standards (with a "factor of safety" included). Once established, the TMDL is allocated among current and future pollutant sources discharging to the water body.

CWA Permits for Discharge to Surface Waters

CWA Sections 401 and 402 contain requirements for discharges to surface waters through the NPDES program, administered by the US EPA. In California, State Water Resources Control Board (SWRCB) is authorized by the US EPA to oversee the NPDES program through the RWQCBs (see related discussion under **Porter-Cologne Water Quality Control Act**, below). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. The permit contains requirements of allowable concentrations of contaminates contained in the discharge.

General Construction Permit

Pursuant to CWA Section 402(p), the SWRCB has issued a statewide general NPDES permit for storm water discharges from construction sites ([NPDES No. CAS000002], per California Water Resources Control Board Resolution No. 2001-046.

According to NPDES regulations, discharges of storm water from construction sites in California with a disturbed area of 1 acre or larger, are required either to obtain individual NPDES permits for storm water discharges or to be covered by the Statewide Construction General Permit. Coverage under the Construction General Permit is accomplished by completing and filing a Notice of Intent with the SWRCB. Each applicant under the Construction General Permit must ensure that a Storm Water Pollution Prevention Plan (SWPPP) is prepared prior to grading and is implemented during construction. The primary objective of the SWPPP is to identify, construct, implement, and maintain Best Management

Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and in authorized non-storm water discharges from the construction site during construction. Permittees are further required to conduct monitoring and reporting to ensure that BMPs are correctly implemented and are effective in controlling the discharge of pollutants.

Effective July 1, 2010, all dischargers are required to obtain coverage under the Construction General Permit Order 2009-0009-DWQ adopted on September 2, 2009. The new Construction General Permit requires the development and implementation of a SWPPP. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP. The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection, and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list the BMPs the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

All new projects that are over 1 acre in size and that are not already covered by the current stormwater permit will have to calculate the proper classification of the project as either a Risk Level 1, 2 or 3 project. Risk Level 1 has the least stringent requirements and is not subject to either the Numeric Action Limits (NALs) or Numeric Effluent Limits (NELs) which have been established for pH and turbidity. In contrast, a NAL of 250 NTU, and a pH of 6.5-8.5 has been established for Risk Level 2, while NELs of 500 NTU and a pH of 6.0-9.0 have been established for Risk Level 3 projects. In addition, Risk Level 1 projects do not have to prepare a Rain Event Action Plan (REAP) while both Risk Level 2 and 3 projects will have to prepare an REAP, which is applicable to every event where there is a forecast of 50 percent or greater probability of measurable precipitation (0.01 inch or more).

The new permit provides a number of technical appendices, which may be used to calculate the risk level of new projects. One of the main criteria for being classified as presenting a greater risk is whether the project will discharge into a stream segment which has been listed under section 303(d) as being impaired for sediment or whether the stream is listed as having beneficial uses for cold, spawn, and migratory fish habitats.

Under the new permit, existing and new projects will also have to comply with Post-Construction water balance requirements which will become applicable in September 2012. Construction General Permit 99-08-DWQ required the SWPPP to include a description of all post-construction BMPs on a site and a maintenance schedule. The new Construction General Permit requires dischargers to replicate the pre-project runoff water balance (defined as the amount of rainfall that ends up as runoff) for the smallest

storms up to the 85th percentile storm event, or the smallest storm event that generates runoff, whichever is larger. The permit emphasizes runoff reduction through on-site storm water reuse, interception, evapotranspiration and infiltration through non-structural controls and conservation design measures (e.g., downspout disconnection, soil quality preservation/enhancement, interceptor trees). The new Construction General Permit also requires dischargers to maintain pre-development drainage densities and times of concentration in order to protect channels and encourages dischargers to implement setbacks to reduce channel slope and velocity changes that can lead to aquatic habitat degradation.

The new permit requires that a SWPPP must be prepared by a Qualified SWPPP developer, which is defined as someone who is either a Professional Civil Engineer, Professional Geologist or Engineering Geologist, Landscape Architect, Professional Hydrologist or Certified Professional in Erosion and Sediment Control.

Municipal Separate Storm Sewer System Permit

Municipal Separate Storm Water Systems (MS4s) are any conveyance or system of conveyances that are owned or operated by a state or local government entity and are designed for collecting and conveying storm water that is not part of a Publicly Owned Treatment Works (i.e., not a combined sewer). The 1987 amendments to the CWA directed the US EPA to implement storm water programs into two phases. Phase I addresses large- and medium-sized MS4 communities with populations of 250,000 or more, and 100,000–250,000, respectively. Phase II regulates storm water discharges associated with small construction activities (activities disturbing between 1 and 5 acres), and small municipal storm water systems (serving populations less than 100,000). The RWQCBs issue MS4 permits that regulate storm water discharges. The permits require the permittee to establish controls to the maximum extent practicable and effectively prohibit non-storm water discharges to the MS4. The MS4 permits detail requirements for new development and significant redevelopment projects, and includes specific sizing criteria for treatment BMPs. The UCR Campus is subject to the Phase II requirements.

4.8.3.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act), which is the state's clean water act, provides the statutory authority for State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB) to regulate water quality and was amended in 1972 to extend the federal CWA authority to these agencies (see **Clean Water Act**, above). The Porter-Cologne Act established the SWRCB and divided the state into nine regions, each overseen by a RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater

supplies, but much of the daily implementation of water quality regulations is carried out by the nine RWQCBs.

The Porter-Cologne Act provides for the development and periodic review of water quality control plans (also known as basin plans). The basin plan for the Santa Ana River Basin designates beneficial uses for the area's surface and groundwater resources and water quality objectives for water bodies in the region.

4.8.3.3 Local

City of Riverside

The City of Riverside Public Works Department is responsible for directing the planning, designing, construction, and maintenance of all streets, sewers, and storm drains within the City's jurisdiction. The department is also responsible for enforcement of the municipal codes and advance planning for public works related projects. The primary goals of the City Engineering Services are to design for transportation, parking, and drainage facilities, and protect private and public improvements from flood damage. This program provides: administrative and technical support services; design and construction of the various street, sewer, and storm drain projects undertaken by the City; coordination of the off-site improvements installed by private developers; and provides long-range planning of Public Works facilities (City of Riverside 2011).

As a State entity, the University of California is not subject to local land use regulations; however, the UCR Campus works with the City of Riverside, as appropriate, to implement drainage improvements and to coordinate efforts related to stormwater quality.

4.8.4 IMPACTS AND MITIGATION MEASURES

4.8.4.1 Significance Criteria

The impacts on hydrology and water quality from the implementation of the 2005 LRDP Amendment 2 would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted.

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Inundation by seiche, tsunami, or mudflow.

4.8.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the proposed project and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR.

- Violate any water quality standards or waste discharge requirements.

Development of the sites of the SOM and two relocated parking structures would not increase the extent of impervious surfaces on the campus as these sites were previously designated for development in the 2005 LRDP and thus would not increase stormwater runoff on campus compared to the amount analyzed in the 2005 LRDP EIR. The development of the Campus Reserve site would result in new runoff from approximately 37.3 acres of land; this land area was not previously included in the 2005 LRDP EIR in the area to be developed with impervious surfaces. However, a substantial increase in runoff from the Campus Reserve site is not anticipated, as existing soil conditions (intermediate permeability) currently result in runoff from the site. The increased runoff (e.g., stormwater) could contain a variety of urban pollutants that could adversely affect water quality. However, implementation of the proposed 2005 LRDP Amendment 2 would be guided by a range of Planning Strategies, including Conservation 2, which requires that buildings be sited and site development planned to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy trees whenever possible, and would continue existing campus programs and practices, such as

Program and Practice (PP) 4.8-1, which requires the Campus to comply with all applicable water quality requirements established by the Santa Ana RWQCB. In addition, projects that would be developed under the amended 2005 LRDP would comply with NPDES Phase I construction requirements and would be incorporated into the campus stormwater management plan as required by Phase II requirements. Therefore, implementation of the 2005 LRDP as amended by the proposed Amendment 2 would not violate any water quality standards or waste discharge requirements, and this impact would be less than significant.

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.

Development of lands associated with the proposed 2005 LRDP Amendment 2, including the *SOM* site, the sites of the two relocated parking structures, land designated for West Campus open space, and the Campus Reserve site, could locally alter drainage patterns and expose soils to erosion during construction, which could result in siltation on or off site. However, all construction activities would comply with Chapter 29 of the CBC, which regulates excavation activities and the construction of foundations and retaining walls, and Chapter 70 of the CBC which regulates grading activities, including drainage and erosion control. In addition, projects developed under the amended 2005 LRDP would implement, as applicable, existing campus Programs and Practices, such as PP 4.8-3 (a) through (e), which would limit development in potentially erosive areas, reduce dust, thereby minimizing site erosion, require adherence to BMPs identified in the UCR Stormwater Management Plan, and require an assessment of existing stormwater facilities to handle future flows. Therefore, implementation of the proposed 2005 LRDP Amendment 2 would not substantially alter the existing drainage pattern of the site or area in a manner that would result in substantial erosion or siltation on or off site, and this impact would be less than significant.

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

For reasons presented above, a substantial increase in runoff from development under the amended 2005 LRDP is not anticipated. In addition, future development on the campus would implement, as applicable, existing campus programs and practices, such as PP 4.8-3(e), which would require the assessment of existing stormwater drainage facilities during project development and improvements, as necessary, to accommodate additional stormwater runoff Therefore, implementation of the amended 2005 LRDP would not substantially alter the existing drainage pattern of the campus or substantially increase the rate

or amount of surface runoff in a manner that would result in flooding on or off site, and this impact would be less than significant.

- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Development of the Campus Reserve site would increase the extent of impervious surfaces on the West Campus and thus increase stormwater runoff generated on the campus. To handle the increase in storm water runoff, future development associated with the proposed 2005 LRDP Amendment 2 would continue to be guided by PP 4.8-3(e), as described above, and adhere to design criteria to retain the flows from a 10-year storm event. Concerning stormwater pollution, the development of new impervious surfaces under the amended 2005 LRDP would contribute runoff that contains urban stormwater contaminants, including grease, oils, heavy metals, fertilizers, and pesticides. However, to reduce the amount of pollutants in the runoff, future development under the amended 2005 LRDP would also be guided by PP 4.8-3(c), which would require continued compliance with SCAQMD Rule 403-Fugitive Dust during construction, and PP 4.8-3(d), which would require compliance with the Draft UCR Stormwater Management Plan. Therefore, implementation of the amended 2005 LRDP would not create or contribute stormwater runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, and this impact would be less than significant.

- Otherwise substantially degrade water quality.

No other potential impacts to water quality were identified in the 2005 LRDP EIR. The proposed Amendment 2 does not include any elements that would otherwise substantially degrade water quality. All of the water quality impacts of the proposed Amendment 2 are within the scope of the impacts analyzed in the 2005 LRDP EIR.

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

The 2005 LRDP EIR assumed that the Campus Reserve site would remain in agricultural use as a research orchard and/or row crops, and did not consider the site for housing. However, according to the 2005 LRDP EIR, the Campus Reserve site is not located within the area of a 100-year flood hazard zone (UCR 2005). Therefore implementation of the amended 2005 LRDP would not place housing units within a 100-year flood hazard, and no impact would occur.

- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

Lands associated with the proposed 2005 LRDP Amendment 2, including the Campus Reserve site, are not located within a 100-year flood hazard zone (UCR 2005). Thus, implementation of the proposed

Amendment 2 would not place structures within a 100-year flood hazard area, and no impact would occur.

- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

The closest dam upstream from the campus is the Seven Oaks Dam, which is located approximately 24 miles upstream from the City of Riverside. Given the distance between the campus and the Santa Ana River (of more than 3 miles), the potential for flooding to occur on lands associated with the proposed 2005 LRDP Amendment 2 as the result of a catastrophic failure of the Seven Oaks Dam is remote. In addition, the potential for catastrophic failure of the Santa Ana Pipeline, which is operated by the California State Department of Water Resources and is located north and east of the campus along Watkins Drive at the base of the Box Springs Mountains, to affect campus lands is also considered remote (UCR 2005). Furthermore, future development associated with the proposed Amendment 2 to the 2005 LRDP would implement as applicable existing campus Programs and Practices, such as PP 4.8-10, which requires the Campus to implement its Emergency Operations Plan in the event of an emergency. Therefore, implementation of the amended 2005 LRDP would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam, and no impact would occur.

- Inundation by seiche, tsunami, or mudflow.

The potential for lands associated with the proposed 2005 LRDP Amendment 2 to be affected by a seiche or tsunami is considered extremely remote given the inland location of the campus and the distance to any large water bodies (UCR 2005). In addition, these lands are relatively flat and therefore would not be susceptible to mudflows. Therefore, implementation of the proposed Amendment 2 to the 2005 LRDP would not result in land uses being inundated by a seiche, tsunami, or mudflow, and no impact would occur.

4.8.4.3 Methodology

The potential for implementation of the proposed 2005 LRDP Amendment 2 to deplete groundwater supplies or interfere with groundwater recharge was evaluated by comparing existing groundwater use on the campus to the groundwater use that would exist with the addition of the SOM facilities.

4.8.4.4 Project Impacts and Mitigation Measures

Impact 4.8-1 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would not substantially deplete groundwater supplies or interfere with groundwater recharge. The impact would be less than significant.**

Development of land uses associated with the proposed 2005 LRDP Amendment 2, especially the SOM, would increase demand for potable water, which in turn would increase demand for groundwater, as the campus is supplied domestic water by the City's Public Utility Department (RPU), which utilizes groundwater wells for potable water. As discussed in **Section 4.15, Utilities**, implementation of the amended 2005 LRDP is anticipated to increase campus demand for potable water by approximately 2.8 million gallons per day (mgd) or 3,136.4 acre-feet per year (AFY), compared to existing conditions.

In its 2010 Urban Water Management Plan (2010 UWMP), the RPU has identified an adequate supply of potable water to meet future demands (through 2035) within the RPU's water supply service area under normal weather conditions. The RPU projects that under normal weather conditions, a surplus of 40,026 AFY would exist in the year 2020, which is the build out year for the amended 2005 LRDP. Under single dry year conditions, the surplus would be about 30,738 AFY, and under multiple dry year conditions, a surplus of 30,738 AFY would exist in the first two years of a multi-dry year period and a surplus of 27,438 AFY would exist in the third year of a multi-dry year period. The EIR prepared for the City of Riverside 2025 General Plan in 2007 confirms the supply surplus assessment. The 2025 General Plan EIR states that this assessment would be true under the typical General Plan buildout scenario. In the event that growth under the 2025 General Plan was to occur under absolute maximum densities allowed in RPU's service area, demand would likely exceed supply. However, the EIR notes that water conservation measures in the 2025 General Plan and mitigation included in the 2025 General Plan EIR would ensure adequate supplies in under all scenarios. The 2025 General Plan EIR therefore concluded that under all development scenarios the water supply impacts would be less than significant. Given the projected surplus of 40,026 AFY in 2020 under normal weather conditions, the incremental demand of 3,136.4 AFY of water by the Campus would be accommodated by the existing and planned supplies. The RPU has indicated that it does not anticipate any problems in providing adequate water supply to remaining and new development on the UCR campus, including the SOM. Therefore, the Campus would not require water supplies in excess of projected supplies. Furthermore, as discussed in **Section 4.15 Utilities**, the Bunker Hill basin is adjudicated, and its safe yield and export rights from the basin are well defined. RPU's water supply from the Bunker Hill Basin is considered reliable during single and multi-year dry periods (Riverside 2011). While not adjudicated, the Riverside North and Riverside South basins are subject to management under a 1969 judgment. The safe yield for the Riverside North and South basins

was established based on 43 years of historical production and hydrologic conditions (1965 to 2007). This period includes wet, dry, and normal periods and is considered to be representative of long-term mean hydrological conditions. The safe yield for the Riverside North and Riverside South basins is 27,200 AFY and 35,100 AFY, respectively (Riverside 2011).

During the planning horizon for the 2005 LRDP, the Campus would continue to implement as applicable the following existing campus Programs and Practices (PP) that would promote water conservation and are assumed as part of the proposed project:

PP 4.8-2(a) To further reduce the Campus' impact on domestic water resources, to the extent feasible, UCR will

(i) Install hot water recirculation devices (to reduce water waste)

(ii) Continue to require all new construction to comply with applicable State laws requiring water-efficient plumbing fixtures, including but not limited to the Health and Safety Code and Title 24, California Code of Regulations, Part 5 (California Plumbing Code)

(iii) Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time

(iv) Install recovery systems for losses attributable to existing and proposed steam and chilled-water systems

(v) Prohibit using water as a means of cleaning impervious surfaces

(vi) Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time

(This is identical to Utilities PP 4.15-1(b).)

PP 4.8-2(b) The Campus shall promptly detect and repair leaks in water and irrigation pipes.

(This is identical to Utilities PP 4.15-1(c).)

PP 4.8-2(c) The Campus shall avoid serving water at food service facilities except upon request.

(This is identical to Utilities PP 4.15-1(d).)

In addition, campus development under the amended 2005 LRDP would also be required to follow water conservation policies listed in the UC Sustainability Policy and adhere to goals listed in the water section of the Campus's Sustainability Action Plan (See **Section 4.15, Utilities** for more detail). Finally, campus development would comply with any future conservation goals or programs enacted by the University of

California. Therefore, implementation of the amended 2005 LRDP would not substantially deplete groundwater supplies.

As noted in the setting, groundwater levels under the UCR campus are generally found at a depth greater than 60 feet. Thus, the potential for construction activities to encounter groundwater is considered remote. If construction activities did require temporary dewatering of sites, the Campus would be required to comply with the requirements of the Santa Ana RWQCB related to discharge of groundwater. Due to depth to groundwater, operational dewatering is not anticipated during the proposed 2005 LRDP Amendment 2 planning horizon. Any such extraction of groundwater would be localized and would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge.

As noted in the setting, the UCR campus is located near the southeastern edge of the Riverside-Arlington groundwater subbasin. The campus is not designated as a groundwater recharge area, nor does the campus serve as a primary source of groundwater recharge within the subbasin. The soils underlying the East Campus are designated as Class D, the least-permeable soil type, and the soils underlying the West Campus are Class C, which has intermediate permeability. Due to the intermediate permeability of the West Campus soils, the addition of impervious surfaces as a result of implementation of the proposed 2005 LRDP Amendment 2 would not substantially interfere with groundwater recharge.

With continued implementation of existing campus Programs and Practices, implementation of the 2005 LRDP as amended by the proposed Amendment 2 would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

4.8.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative groundwater impacts includes the Upper Santa Ana River Groundwater Basin. This analysis, therefore, includes development anticipated under the County of Riverside General Plan within the Upper Santa Ana River Groundwater Basin, as well as development anticipated under the City of Riverside 2025 General Plan.

Impact 4.8-2 **Cumulative development, including the proposed 2005 LRDP Amendment 2, would not substantially deplete groundwater supplies or interfere with groundwater recharge. The cumulative impact would be less than significant.**

Cumulative development within the County and City of Riverside would not deplete groundwater supplies or interfere substantially with groundwater recharge. The RPU's primary groundwater aquifer used for domestic supply is located within the jurisdiction of San Bernardino County and, therefore, groundwater recharge would not be affected by future development within the City or County of Riverside. The groundwater basins are also not projected to be overdrawn due to the increasing usage of recycled water. The County and City of Riverside General Plan Program EIRs includes policies and mitigation measures to reduce potential effects from future development within their jurisdictions, and impacts would be assessed on a project-by-project basis.

As stated above, implementation of the amended 2005 LRDP would not result in the depletion of groundwater supplies. The City of Riverside has identified an adequate supply of potable water to meet future demand (through 2035) within the RPU's water supply service area based on the projected growth in population within the service area under the typical growth scenario. As stated above, a surplus is projected to exist in the year 2020, which is the build out year for the amended 2005 LRDP. In addition, the RPU projects that supply would exceed the cumulative demand for water in its service area during a single dry year as well as under a multiple dry year scenario. Therefore, even with the addition of 2.8 mgd or 3,136.4 AFY with the proposed LRDP amendment, there is ample supply to meet the projected demand within the RPU's water supply service area under both normal and dry years (See **Impact 4.15-3** in **Section 4.15, Utilities** for a more in depth discussion). The City's General Plan EIR conservatively notes that under the Maximum or Maximum with Planned Residential Development levels, the demand could exceed supply. However with the implementation of mitigation measures and several water supply-related General Plan policies, the City concluded impact would be reduced to less than significant for that scenario as well (Riverside 2007). The City's General Plan EIR is incorporated by reference. Therefore, the campus would not require water supplies in excess of existing entitlements and resources or result in the need for new or expanded entitlements.

Further, the campus is not a substantial source of groundwater recharge for the groundwater basin that underlies the campus, which is recharged primarily through subsurface flows from the Box Springs Mountains and infiltration in other areas. As such, development under the amended 2005 LRDP would not result in a substantial interference with groundwater recharge in an area (the campus) that does not substantially recharge the groundwater basin it overlies. The cumulative impact would be less than significant.

Mitigation Measures: No mitigation is required.

4.8.5 REFERENCES

California Department of Water Resources, 2003, *California's Groundwater—Bulletin 118, Riverside County Groundwater Basins/Subbasins*.

City of Riverside Public Utilities Department. 2009. *2009 Water Quality Annual Report*.

Riverside, City of. 2011. *2010 Urban Water Management Plan*, July.

City of Riverside. 2007. City of Riverside General Plan and Supporting Documents EIR. Certified November.

University of California, Riverside (UCR). 2005. Final Environmental Impact Report on the 2005 Long Range Development Plan, SCH No. 2005041164.

4.9 LAND USE AND PLANNING

4.9.1 INTRODUCTION

This section describes existing land uses on the UCR campus and analyzes the potential for implementation of the proposed 2005 LRDP Amendment 2 to result in land use impacts.

Data used in the preparation of this section was obtained from various sources, including UCR staff, previous environmental documentation prepared for UCR including the 2005 LRDP EIR, and the Southern California Association of Governments. Bibliographic entries for reference materials are provided in **subsection 4.9.5, References** of this section.

In response to the Notice of Preparation issued for this EIR, one member of the campus community asked whether the academic designation on the campus land use map allowed for support uses such as printing and publishing. Such uses are allowed uses under the academic designation. Another member of the public stated that the Campus Reserve site should be preserved for future growth of the medical school program and should not be designated for student housing. The City of Riverside generally noted that the Draft EIR needs to expand on the analysis in the NOP/Initial Study as it relates to land use compatibility. All of these scoping comments were considered in the analysis presented below.

4.9.2 EXISTING CONDITIONS

4.9.2.1 On-Campus Land Use

The approximately 1,144.4-acre campus is located entirely within the City of Riverside in Riverside County. The I-215/SR-60 freeway generally bisects the campus in a northwest-southeast alignment. The East Campus is approximately 614.5 acres and contains the academic core, most student housing and support uses, and all existing recreation facilities. This area is bounded by Blaine Street (including the northwest corner parcel at Blaine Street and Canyon Crest Drive) and Watkins Drive to the north, the freeway to the west and south, and a line roughly following Valencia Hill Drive to the east. The West Campus is approximately 529.9 acres located west of the freeway and is primarily used for agricultural teaching and research. This area is generally bounded by the freeway on the east, University Avenue/Everton Place and its extension west on the north, Chicago Avenue to the west, and Le Conte Drive to the south. The City of Riverside retains ownership of a 9.46-acre in-holding parcel on the West Campus (see **Figure 3.0-3** in **Section 3.0, Project Description**), south of Martin Luther King Jr. Boulevard (MLK), which the City has designated as surplus land (UCR 2005).

West Campus

The following describes the existing land uses on the West Campus by functional land use category.

Academic/Administrative

Academic/Administrative uses that currently exist on the West Campus include the University Extension (UNEX) building, the Highlander Hall office building, and the Human Resources office building. These facilities are located on University Avenue. The campus boundary west of UNEX drops down to Everton Place and its extension west towards Chicago Avenue.

Housing

Housing on the West Campus is limited and consists of the International Village, a third-party student housing complex that is located across from the UNEX on Everton Place.

Agricultural Teaching and Research Fields

Agricultural teaching and research fields (and related support facilities, including greenhouses, equipment storage facilities, reservoirs) currently occupy approximately 489 of the 511.3 total acres on the West Campus. The teaching and research fields and related infrastructure are used by a variety of campus departments and organized research units (ORUs). The majority of these groups are associated with the College of Natural and Agricultural Sciences.

Parking

Parking on the West Campus generally consists of a large surface parking lot (Parking Lot No. 30) located adjacent to the I-215/SR-60 freeway north of MLK. One UCR-owned parking structure is located on the West Campus adjacent to the UNEX facility.

4.9.2.2 Existing Adjacent Land Uses

Land uses surrounding the campus are primarily residential, with some commercial uses along the major streets, with University Avenue as the primary commercial corridor between the UCR campus and downtown Riverside. Existing development east of UCR to the base of the Box Springs Mountains is predominantly single-family residential with some multi-family and limited commercial. Land to the south of the West Campus area is also largely developed with single-family residences, with a multifamily residential and commercial development in the vicinity of the intersection of Central Avenue and Canyon Crest Drive. The area west of the campus contains a mix of land uses, including single and

multifamily residential, vacant land, limited agriculture, and commercial uses. The area located generally north of University Avenue and west of Canyon Crest Drive contains a mixture of mostly multi-family residential, industrial, public (i.e., churches), institutional (i.e., schools), and commercial uses, as well as vacant land (UCR 2005).

University Avenue, Everton Place and its extension west borders the West Campus to the north. This corridor includes a collection of retail shops, fast food outlets and hotels and motels, with most uses one to two stories in height, although some of the more recent development is three stories and even six stories in height (UCR 2005). The I-215/SR-60 freeway borders the eastern edge of the West Campus. As mentioned above, in the vicinity of the campus the freeway has three mixed-flow lanes and one HOV lane in each direction. Le Conte Drive forms the southern boundary of the West Campus, with one-story single-family homes located across the street from the campus. Chicago Avenue, a four-lane street, forms the western edge of the West Campus, with single-family residential uses as the predominant use on the western side of the street.

4.9.3 REGULATORY FRAMEWORK

As a state entity, the University of California, of which UCR is a part, is not subject to regional or local plans and policies. Nevertheless, such plans and policies are of interest or concern because the campus and local development are coincident. UCR has a long tradition of working voluntarily and cooperatively with the City of Riverside and other regional agencies, and it is University policy to seek consistency with regional and local plans and policies, where feasible. Therefore, a summary of these plans is presented in this EIR and the proposed project's consistency with these plans is evaluated later in this section.

4.9.3.1 Regional Southern California Association of Governments

The Southern California Association of Governments (SCAG) is a regional council of governments that serves as the Metropolitan Planning Organization for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. SCAG serves as a forum for regional issues relating to transportation, the economy and community development, and the environment (UCR 2005).

SCAG has developed a number of plans to achieve regional objectives. The plans relevant to the proposed 2005 LRDP Amendment 2 are the Regional Comprehensive Plan (RCP), the Regional Transportation Plan (RTP), and the Compass Growth Vision Report (CGV). These plans are summarized below.

Regional Comprehensive Plan

The updated 2008 Regional Comprehensive Plan (RCP) is a long-term comprehensive plan which addresses the SCAG region's many challenges, and provides a strategic vision for handling the region's land use, housing, economic, transportation, environmental and overall quality of life needs. The RCP is similar to a general plan for the region and is in fact intended to function as a voluntary toolbox to assist cities and counties in developing general and specific plans. To that end, the RCP includes nine chapters: land use and housing, open space and habitat, water, energy, air quality, solid waste, transportation, security and emergency preparedness, and economy; each with specific goals, outcomes, and action plans designed to help set the path toward a more sustainable region. The RCP includes "constrained policies," which are recommended near-term policies, and "strategic initiatives" that are longer-term strategies aimed to achieve the desired goals and outcomes of the RCP.

Although SCAG did not comment on the NOP for this EIR and has not determined whether the project is of "regional significance," this EIR evaluates the consistency of the proposed 2005 LRDP Amendment 2 with relevant RCP policies.

Regional Transportation Plan

Federal guidelines require all new regionally significant transportation projects to be included in the Regional Transportation Plan (RTP) before they can receive federal or state funds or approvals. The RTP must be updated and federally approved every four years. Federal approval requires a positive demonstration that the RTP projects will not generate travel emissions that exceed those assumed in the applicable Air Quality Management Plan; this requirement is known as "transportation conformity."

SCAG adopted the current RTP, *Making the Connections, 2008 Regional Transportation Plan* (2008 RTP), on May 8, 2008. The 2008 RTP contains a plan to provide adequate highway, transit, rail, aviation, and goods movement infrastructure to meet the region's needs by 2035. The 2008 RTP is a $531.5 billion plan that emphasizes the importance of system management, goods movement, and innovative transportation financing. It strives to provide a regional investment framework to address the region's transportation and related challenges, and looks to strategies that preserve and enhance the existing transportation system and integrate land use into transportation planning. The 2008 RTP includes goals and policies applicable to transportation and, in some cases, land use projects. This EIR evaluates the consistency of the proposed 2005 LRDP Amendment 2 with relevant 2008 RTP policies.

Compass Growth Vision Report

The Compass Growth Vision Report presents the comprehensive growth vision for the six-county SCAG region and presents the achievements of the Compass process. It details the evolution of the draft vision from the study of emerging growth trends to the effects of different growth patterns on transportation systems, land consumption, and other factors.

The Compass Growth Vision Report concentrates on the physical aspects of regional growth – where people and jobs locate, the type and quantity of buildings that may be constructed, and how people and goods move in the region. To address all growth visioning principles, SCAG, sub-regions, and cities continue to refine the social, economic, and other components that are also crucial to the Vision's success, including: workforce housing, job training and education, prosperity that reaches everyone, and protection of key open spaces.

SCAG's Compass Blueprint 2% Strategy is a guideline for how and where SCAG can implement the growth vision for Southern California's future. It calls for modest changes to current land use and transportation trends that make up approximately 2 percent of the region's land area. SCAG's planning efforts and resources invested according to the 2 percent Strategy would help meet the SCAG region's goals of improved mobility, livability, prosperity, and sustainability for local neighborhoods and their residents.

The majority of the West Campus area of UCR is located within a Compass 2 percent Strategy Area, which follows major arterial roadways through several jurisdictions, where development is intended to balance employment, housing, and services to reduce vehicle trips and emissions, enhance livability, expand prosperity, and increase sustainability. This EIR evaluates the consistency of the proposed 2005 LRDP Amendment 2 with relevant Compass Growth Vision Report policies.

Santa Ana Regional Water Quality Control Board, Water Quality Control Plan (Santa Ana Basin)

The Santa Ana Regional Water Quality Control Board (Santa Ana RWQCB) is the regional Water Quality Control Board that regulates water quality in the region of northwestern Orange County, western Riverside County, and parts of southwestern San Bernardino County. The Santa Ana RWQCB regulates surface water quality in the Santa Ana River watershed via the Santa Ana Basin Plan, which was updated in February 2008. The Santa Ana RWQCB prepares (and updates) the Santa Ana Basin Plan, which identifies beneficial uses of water and establishes implementation programs to protect those beneficial uses. Through Waste Discharge Requirements, the RWQCB sets limits on pollutants that may be discharged into the Santa Ana River and its tributaries. These limits are designed to meet the water

quality objectives established in the Santa Ana Basin Plan. UCR is located within the region under the jurisdiction of the Santa Ana RWQCB.

Western Riverside County Multi-Species Habitat Conservation Plan

To provide an integrated approach to land use and habitat conservation planning, the County of Riverside has developed a Multiple-Species Habitat Conservation Plan (MSHCP) in coordination with an update of the County General Plan and a Transportation Corridor Plan. The MSHCP builds upon the previously approved Stephens' Kangaroo Rat Habitat Conservation Plan, and addresses an area of 1.26 million acres along with proposing a conservation area, including public lands, of approximately 500,000 acres. The core of the MSHCP area reserves includes riparian, oak woodland, and 15,000 acres of coastal sage scrub habitat (UCR 2005).

The Western Riverside County MSHCP study area encompasses approximately 1.26 million acres, including the UCR campus. Conservation target areas within the plan include areas in the vicinity of the campus, such as the Box Springs Mountains and Sycamore Canyon Park. Although sections of Cells 634 and 719 of the MSHCP do include portions of the campus, the plan does not identify any portion of the UCR campus for conservation (UCR 2005).

South Coast Air Quality Management District

The management of air quality in the South Coast Air Basin is the responsibility of the South Coast Air Quality Management District (SCAQMD). The SCAQMD is responsible for bringing air quality in the areas under its jurisdiction into conformity with federal and state air quality standards. Specifically, the SCAQMD is responsible for monitoring ambient air pollutant levels throughout the South Coast Air Basin and for developing and implementing attainment strategies to ensure that future emissions will be within federal and state standards.

In order to achieve air quality standards, the SCAQMD adopts an Air Quality Management Plan (AQMP) that serves as a guideline to bring pollutant concentrations into attainment with federal and state standards. The SCAQMD determines if certain rules and control measures are appropriate for the region according to technical feasibility, cost effectiveness, and the severity of nonattainment. Once the SCAQMD has adopted the proper rules, control measures, and permit programs, it is responsible for implementing and enforcing compliance with those rules, control measures, and programs.

The SCAQMD is the agency responsible for preparing the AQMP for the South Coast Air Basin. The SCAQMD adopted the currently applicable Final 2007 Air Quality Management Plan (2007 AQMP) on June 1, 2007. CARB approved the 2007 AQMP as the comprehensive State Implementation Plan

component for the South Coast Air Basin on September 27, 2007. The purpose of the 2007 AQMP for the Basin (and those portions of the Salton Sea Air Basin under the SCAQMD's jurisdiction) is to set forth a comprehensive program that will lead these areas into compliance with federal and state air quality planning requirements for ozone and $PM_{2.5}$. In addition, as part of the 2007 AQMP, the SCAQMD is requesting U.S. EPA's approval of a "bump-up" to the "extreme" nonattainment classification of ozone for the Basin, which would extend the attainment date from 2021 to 2024 and allow for the attainment demonstration to rely on emission reductions from measures that anticipate the development of new technologies or improvement of existing control technologies.

The SCAQMD listed possible approaches for long-term control measures to reduce ozone and criteria pollutant emissions. These include programs promoting or requiring the extensive retirement of high-emitting vehicles and engines, accelerated penetration of partial zero emissions vehicles (PZEVs) and zero emissions vehicles (ZEVs), expanded modernization and retrofit of heavy-duty trucks and buses, expanded vehicle inspection and maintenance programs, advanced near-zero and zero-emitting cargo transportation technologies, expanded modernization and retrofit of off-road equipment, more stringent gasoline and diesel specifications and extensive use of diesel alternatives, more stringent emission standards for new and existing ocean-going vessels, harbor craft, and jet aircraft, accelerated use of renewable energy and development of hydrogen technology and infrastructure, ultra-low VOC formulations and reactivity-based controls, and AB 32 implementation programs that would have co-benefits of reducing criteria pollutants.

4.9.3.2 Local

County of Riverside

The County of Riverside completed a final Comprehensive General Plan in October 2003 that serves as the policy guide concerning desirable future physical development of the community. The plan describes anticipated future growth, development, and environmental management programs over the long term within Riverside County. Most of the unincorporated portions of western Riverside County and some of eastern Riverside County are divided into 19 Area Plans to provide more detailed land use and policy direction regarding local issues, such as land use, circulation, and open space. As the UCR campus is located within the City of Riverside, it is not addressed in the Comprehensive General Plan for Riverside County (UCR 2005). The County of Riverside is currently completing the environmental review process for the 2008 General Plan Update.

The Highgrove Area Plan of the Comprehensive General Plan is located to the east and north of the UCR campus. Under the General Plan, the primary purpose of the Highgrove Area Plan is to preserve the

remote, rural, and small-town nature of the Highgrove area, while conservation of habitat, preservation of existing communities, and provision of areas for lower density residential uses are the primary objectives of this Area Plan. The developed areas northwest of the campus and immediately east of I-215/SR-60 freeway are designated for a mix of urban uses, including low density, medium density, and high-density residential, commercial retail, and light industrial uses. To the north and northeast of the campus are land uses designed to preserve the rural nature of the area, including conservation of open space that is associated with the Box Springs Mountains Regional Park and very low density residential, rural residential, and rural mountainous uses. The open space conservation area to the north of the campus also extends to the east, along with other designated uses including rural mountainous, rural residential, and very low density residential. In the portion of the planning area located southeast of the campus, a mix of urban uses is planned in close proximity to the I-215/SR-60 freeway, including a range of residential, employment-generating, and public land uses. Among these land uses are high density residential, very low density residential, commercial retail, commercial office, and open space recreation (UCR 2005).

City of Riverside

The City of Riverside adopted its current General Plan (General Plan 2025) in November 2007. The General Plan 2025 designates the entire UCR campus for public facilities/institutional uses. The UCR campus is located at the eastern edge of the City of Riverside, within the University Neighborhood Plan area, which was adopted in 2008 under the provisions of the General Plan 2025. The University Neighborhood Plan provides the most recent statement of the City's land use designations, goals and policies relevant to the campus.

University Neighborhood Plan

The areas in the City surrounding UCR are subject to the provisions of the University Neighborhood Plan. Written by the City with input from UCR, residents, and property owners, the University Neighborhood Plan was developed as part of the Riverside General Plan 2025. The Plan accommodates the expansion of facilities and student enrollment at UCR while ensuring the preservation and enhancement of residential areas within the University Neighborhood and encourages the reuse and/or revitalization of underutilized commercial areas with appropriately scaled mixed-use developments to serve both residents of the City and UCR students, faculty and staff.

The University Community Plan addresses five primary land use challenges and opportunities: the need for an adequate supply of housing in proximity to the UCR campus, lack of adequate space for student housing in vacant parcels within the University Neighborhood, student demand for rental units and

overcrowding of rental units within the single-family areas east of Watkins Drive, current lack of development opportunities for new types of retail areas surrounding UCR, and the economics of revitalizing small, neighborhood shopping areas. The University Neighborhood Plan includes various land use policies relevant to these issues:

- UNP 1.1 — Coordinate with UCR and neighborhood groups in joint planning efforts, including the joint development and updates of the UCR Long Range Development Plan.
- UNP 1.2 — The City should support UCR-created Educational Programs for UCR students regarding their relationships with the University Neighborhood.
- UNP 1.3 — Protect the character of the existing single-family neighborhoods, seeking to minimize potential "town gown" conflicts.
- UNP 1.4 — Encourage the reuse and/or revitalization of underutilized commercial areas through appropriately scaled mixed-use development.
- UNP 1.5 — Seek opportunities to develop commercial centers that serve both students and civilian needs.
- UNP 2.1 — Encourage the construction of new rental apartments as well as the retention of existing and future rental stock and the provision of affordable units.
- UNP 3.1 — Protect and maintain the single-family residential areas located primarily east of Watkins Drive and the pockets of single-family areas located west of Watkins Drive.
- UNP 3.2 — Provide quality, affordable housing for University Neighborhood residents, students, faculty and staff.
- UNP 3.3 — Explore opportunities to revitalize older shopping centers by increasing the level of neighborhood shopping and pedestrian amenities, upgrading the tenant mixes and encouraging private sector investment in the existing shopping centers throughout the University Neighborhood. This may include introducing mixed-use housing where appropriate.
- UNP 3.4 — Continue to upgrade University Avenue as a location for community and University related housing and commercial areas as well as enhancing University Neighborhood's accessibility to Downtown and the Riverside Marketplace.
- UNP 4.1 — Update the University Avenue Specific Plan to allow for mixed-use and residential development along the corridor that supports land use designations of the General Plan.
- UNP 4.2 — Encourage the creation of a continuous uniform streetscape along University Avenue.
- UNP 4.3 — Encourage student housing and activities along the University Avenue corridor.
- UNP 5.1 — Preserve the rural lifestyle in the Mount Vernon Bowl District.

- UNP 5.2 — Encourage Riverside County to carefully review development proposals for open spaces adjacent to the Box Springs Mountain Reserve Park in order to ensure sensitivity to the natural terrain and compatibility with residential uses in the Mount Vernon Bowl area.

University Avenue Specific Plan

The University Avenue Specific Plan was developed by the City of Riverside to promote rejuvenation along the University Avenue corridor between the UCR campus and Downtown Riverside. The plan strengthens the connection between the UCR campus and Downtown Riverside by improving the visual quality of the corridor, improving the pedestrian environment, and promoting the use of non-automotive transportation modes. In addition, the plan promotes mixed-use development in certain locations near the UCR campus. In order to accomplish its vision for the University Avenue corridor, the plan provides circulation/streetscape standards and guidelines for public property, land use regulations, development standards, and design guidelines.

4.9.4 IMPACTS AND MITIGATION MEASURES

4.9.4.1 Significance Criteria

The impacts on land use and planning from the implementation of the 2005 LRDP Amendment 2 would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Physically divide an established community
- Result in development of land uses that are substantially incompatible with existing adjacent land uses or with planned uses
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect
- Conflict with any applicable habitat conservation plan or natural community conservation plan

4.9.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR.

- Would the proposed project physically divide an established community?

As discussed in the Initial Study, development associated with the proposed 2005 LRDP Amendment 2 would occur within established campus boundaries, and no incursion into, or division of, the

surrounding residential communities would occur. In addition, although one element of the proposed Amendment 2 to the 2005 LRDP is a revision to the campus boundary to include existing housing developments that have been acquired by the Campus since 2005, these changes to the campus boundary and the designation of the acquired areas as housing in the 2005 LRDP Land Use map would not result in the division of an existing residential community. The Campus complied with CEQA at the time these housing developments were acquired and determined that there would be no environmental impacts from the acquisitions because close to 97 percent of the residents of the acquired housing were students and any non-UCR related renters were allowed to stay until such time that they voluntarily chose to relocate to other housing. Similarly, adjusting the campus boundary as part of the proposed Amendment 2 to include this acquired housing would have no impact. Therefore, implementation of the proposed 2005 LRDP Amendment 2 would not physically divide an established community, and no impact would occur.

- Conflict with any applicable habitat conservation plan or natural community conservation plan

As discussed in the Initial Study, elements listed in the proposed 2005 LRDP Amendment 2 would not conflict with any applicable habitat conservation plan or natural community conservation plan, and no impact would occur.

4.9.4.3 Methodology

As a conceptual land use plan, the amended 2005 LRDP Land Use Map would help guide the siting of future physical development, but does not commit the Campus to any specific projects or the location of those projects. To estimate the potential for implementation of the proposed Amendment 2 to the 2005 LRDP to result in land use incompatibilities between campus development and adjacent community land uses, or conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect, existing land uses (on- and off-campus) were compared to proposed future land uses that would be permitted under the proposed 2005 LRDP Amendment 2.

4.9.4.4 Project Impacts and Mitigation Measures

Impact 4.9-1 **Implementation of the proposed 2005 LRDP Amendment 2, which relevant 2005 LRDP Planning Strategies and Programs and Practices, would result in changes in on-campus land uses. These changes would not be substantially incompatible with existing or proposed adjacent land uses on and off campus. This impact would be less than significant.**

The proposed 2005 LRDP Amendment 2 would result in the addition of 3.1 million gsf of building space associated with the SOM that was not previously considered in the 2005 LRDP EIR. It would revise the 2005 LRDP Land Use Map of the campus as it relates to the West Campus by relocating certain parking structure sites; designating a 38.7 acre area at the northeast corner of Iowa Avenue and MLK for a school of medicine; changing the configuration of major open space areas on the West Campus and designating the Campus Reserve site for *housing* and *open space* uses. No changes to existing or planned uses on the East Campus are included in the proposed amendment except to update the campus map to include previously approved campus projects and/or land acquisitions.

The *SOM* site would be adjacent to the West Campus *Academic* core at the northeastern corner of Iowa Avenue and MLK in an area that has been identified for campus uses since the 2005 LRDP as well as the 1990 LRDP and would be surrounded by other academic and support uses. The *SOM* designation would therefore not result in any land use conflicts with existing and planned uses in this portion of the campus. Similarly, the reconfiguration of the West Campus major open space, the Gage Canal Mall, would mainly occur in the eastern portion of the West Campus in the academic core and *SOM* precincts, resulting in no conflicts with existing and proposed uses.

The designation of the Campus Reserve site for *housing* and *open space* uses would facilitate the development of these uses in this portion of the campus. The residential uses on the Campus Reserve site would not result in land use incompatibilities as the site is flanked on the east side by planned on-campus residential land uses and by existing off-campus residential and commercial land uses west of Chicago Avenue.

Furthermore, future development of the campus would be guided as applicable by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategies are relevant to land use on the West Campus and the adjacent area and are assumed as part of the proposed project:

PS Land Use 1 — Achieve academic core densities of 1.0 FAR or higher on the East Campus and 1.6 to 1.9 FAR on the West Campus in order to achieve a balance of academic land area versus other required uses.

PS Land Use 2	In order to achieve these development densities, infill sites in the partially developed East Campus academic core, and expand to the West Campus academic zone immediately adjacent to the I-215/SR-60 freeway, maintaining a compact and contiguous academic core.
PS Land Use 3	Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.
PS Land Use 4	Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing.
PS Land Use 5	Remove existing family housing units on the East Campus, and provide replacement and additional units of family housing on the West Campus.
PS Land Use 6	Provide expanded athletics and recreational facilities and fields on the East and West Campuses, adjacent to concentrations of student housing.
PS Land Use 7	Over time, relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate.
PS Open Space 4	Provide landscaped buffers and setbacks along campus edges, such as Valencia Hill Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, and the I-215/SR-60 freeway.
PS Open Space 6	Provide a new Campus Landmark Open Space on the West Campus, the Gage Canal Mall, to reflect the natural dry arroyos that are part of the Riverside landscape, and provide gathering/activity spaces within and adjacent to the Mall.
PS Open Space 7	Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space.
PS Campus & Community 1	Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.

PS Campus & Community 2 — Work with the City to link the open spaces of UCR, University Avenue, the Marketplace, and the Downtown with enhanced streetscape treatments, including bicycle and pedestrian improvements.

PS Campus & Community 3 — Work with the City to link the open spaces of UCR with the Citywide Trail Network.

PS Transportation 1 — Develop an integrated multi-modal transportation plan to encourage walking, biking and transit use.

PS Transportation 2 — Expand shuttle or tram service connecting major parking lots and campus destinations, and linking the East and West Campuses. Coordinate this system with RTA routes and schedules.

PS Transportation 3 — Provide a continuous network of bicycle lanes and paths throughout the campus, connecting to off-campus bicycle routes.

PS Transportation 4 — Over time, limit general vehicular circulation in the central campus, but allow transit, service, and emergency vehicle access, and provide access for persons with mobility impairments.

PS Transportation 5 — Provide bicycle parking at convenient locations.

PS Transportation 6 — Implement parking management measures that may include

- Restricted permit availability
- Restricted permit mobility
- Differential permit pricing

In addition, continued implementation as applicable of the following existing campus Programs and Practices (PP) would also reduce potential land use incompatibilities with on-campus and off-campus land uses and are assumed as part of the proposed project:

PP 4.9-1(a) — The Campus shall provide design professionals with the 2007 Campus Design Guidelines and instructions to implement the guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design.

(This is identical to Aesthetics PP 4.1-1.)

PP 4.9-1(b) The Campus shall continue to provide design professionals with the 2007 Campus Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the Guidelines with respect to the selection of plants, retention of existing trees and use of water conserving plants were feasible.

(This is identical to Aesthetics PP 4.1-2(a).)

PP 4.9-1(d) UCR strongly commits to working closely with the City of Riverside to address and resolve land use compatibility impacts arising from increased enrollment on the residential neighborhoods surrounding UCR, particularly related to the impacts of student housing and associated parking, noise, and traffic.

Continued implementation of PP 4.9-1(a), PP 4.9-1(b), and PP 4.9-1(d) would assure that new development would be sited to minimize site disturbance and land use compatibility impacts, and maintain existing landscapes and would be designed to be consistent with the Campus Design Guidelines, which would contribute to an overall visual character of new development that is compatible with existing on-campus development. In addition, development of the proposed SOM would be guided by design criteria, architectural guidelines and landscape design guidelines specific to the *SOM* site. With implementation of the identified LRDP Planning Strategies, continued implementation of existing campus Programs and Practices, and implementation of SOM specific design criteria, architectural guidelines and landscape design guidelines, implementation of the proposed 2005 LRDP Amendment 2 would not result in development of land uses that are substantially incompatible with existing adjacent land uses or with proposed uses, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.9-2 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and Programs and Practices, would not conflict with a land use plan, policy, or regulation of a local agency. The impact would be less than significant.**

UCR is part of the University of California, a constitutionally created entity of the State of California. As a constitutional entity, the University of California is not subject to municipal regulations, such as the County and City General Plans. Nevertheless, UCR has considered local plans and policies for the communities surrounding the campus. The City of Riverside General Plan, which includes the campus, has identified UCR as a public facility/institutional land use, and the amended 2005 LRDP is generally consistent with this local plan.

UCR, which meets regularly with the City, maintains an ongoing exchange of ideas and information and pursues mutually acceptable solutions for issues that confront both the campus and the community. To foster this process, UCR participates in, and communicates with, City and community organizations, and sponsors various meetings and briefings to keep local organizations, associations, and elected representatives apprised of ongoing planning efforts. UCR participated in the development of the current City of Riverside General Plan and the University Neighborhood Plan in an effort to coordinate planning efforts between the City of Riverside and the campus.

As required by Section 15125(d) of the *State CEQA Guidelines*, this document discusses any inconsistencies between the proposed 2005 LRDP Amendment 2 and applicable regional plans. The regional plans relevant to the proposed 2005 LRDP Amendment 2, and for which a consistency analysis is provided, include the Regional Comprehensive Plan (SCAG 2008), the Regional Transportation Plan (SCAG 2008), the Compass Growth Vision Report (SCAG 2004), the Water Quality Control Plan for the Santa Ana River Basin (California Regional Water Quality Control Board, Santa Ana Region, 2008), and the Air Quality Management Plan (South Coast Air Quality Management District [SCAQMD] 2007). As demonstrated by the analysis below, the proposed Amendment 2 to the 2005 LRDP would not conflict with any local or regional plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Southern California Association of Governments Regional Comprehensive Plan (RCP)

The RCP consists of nine chapters that contain goals, policies, implementation strategies, including: land use and housing, open space and habitat, water, energy, air quality, solid waste, transportation, security and emergency preparedness, and economy. The discussion below evaluates the consistency of the proposed 2005 LRDP Amendment 2 with relevant RCP policies.

Policy LU-4 **Local governments should provide for new housing, consistent with State Housing Element law, to accommodate their share of forecast regional growth.**

Consistency Analysis. Development that would occur under the proposed 2005 LRDP Amendment 2, in particular the proposed SOM, would be located within close proximity to planned student housing, and students and visiting faculty and staff associated with the SOM would have access to this housing. This housing would reduce demand for housing in the City of Riverside, which in turn could be used by the City to accommodate its share of forecasted regional growth. Therefore, the proposed Amendment 2 to the 2005 LRDP is consistent with this policy.

Policy OSC-1 **SCAG, in collaboration with its member agencies, should work to enhance community open space and its accessibility.**

Consistency Analysis. The proposed 2005 LRDP Amendment 2 would include a major modification to the open space configuration in the West Campus Academic core to include the reconfiguration of the "Grove" concept to the "Gage Canal Mall" concept and the inclusion of the West Campus Mall; the extension of the 100-foot-wide landscape buffer along the north side of MLK between Cranford Avenue and Chicago Avenue; and the extension of the Northwest and Southwest Malls from Cranford Avenue to Chicago Avenue. These open space features would include landscaping and shade trees. In addition, the new linear Gage Canal Mall would include a meandering series of paths and landscape expression of various widths along the length of the canal (based on the 50-foot-wide canal right-of-way) from University Avenue to MLK. Thus, the proposed 2005 LRDP Amendment 2 is consistent with this policy.

Policy OSC-8 **Local governments should encourage patterns of urban development and land use, which reduce costs on infrastructure and make better use of existing facilities.**

Consistency Analysis. The proposed 2005 LRDP Amendment 2 would increase the amount of development on the West Campus by 3.1 million gsf. The proposed uses would include medical education and administration, medical research, ambulatory care, and medical office uses. Infrastructure systems are in place on campus to serve current development. The construction of facilities under the proposed Amendment 2 to the 2005 LRDP would require basic service connections to the existing delivery infrastructure and would, therefore, minimize costs associated with infrastructure construction. However, in some cases new delivery infrastructure would need to be installed. Regardless, the location of the *SOM* site in close proximity to existing development in the City of Riverside would ensure that the length of the service extension would be minimal. As a result, the proposed 2005 LRDP Amendment 2 is consistent with this policy.

Policy OSA-7 **Local governments should avoid the premature conversion of farmlands by promoting infill development and the continuation of agricultural uses until urban development is imminent; if development of agricultural lands is necessary, growth should be directed to those lands on which the continued viability of agricultural production has been compromised by surrounding urban development or the loss of local markets.**

Consistency Analysis. Implementation of the proposed 2005 LRDP Amendment 2 would result in the conversion of Prime Farmland to non-agricultural uses. Development associated with the proposed Amendment 2 to the 2005 LRDP would occur adjacent to existing development in the City of Riverside and thus constitutes infill development. Therefore, the loss of farmland would occur on a site where the

continued viability of agricultural production has been compromised by surrounding suburban development, and the proposed 2005 LRDP Amendment 2 is consistent with this policy.

Policy EN-8 **Developers should incorporate and local governments should include the following land use principles that use resources efficiently, eliminate pollution and significantly reduce waste into their projects, zoning codes and other implementation mechanisms:**

- **Mixed-use residential and commercial development that is connected with public transportation and utilizes existing infrastructure.**
- **Land use and planning strategies to increase biking and walking trips.**

Policy EN-14 **Developers and local governments should explore programs to reduce single occupancy vehicle trips such as telecommuting, ridesharing, alternative work schedules, and parking cash-outs.**

Consistency Analysis. As discussed above, the proposed SOM would include a mix of uses, including medical education and administration, medical research, ambulatory care, and medical office uses that would be located adjacent to future residential and academic uses. Presently four bus lines that provide direct service to the West Campus operate within the vicinity of the *SOM* site. In addition, the West Campus is currently served by a campus shuttle, and UCR plans on increasing shuttle service to the West Campus after the development of the proposed *Academic*, *SOM* and *Housing* uses. Therefore, the proposed development on the West Campus would connect with the local transit system. In addition, buildings associated with the proposed SOM would connect with existing water and sewer mains located in public streets.

The proposed SOM would implement the University's Transportation Demand Management (TDM) program in an effort to not only increase transit trips, but biking and walking trips as well. Opportunities to undergo biking and walking trips to and from the West Campus would be afforded by the planned bicycle and pedestrian system on the West Campus. Thus, development of the West Campus would increase the frequency of bicycling and walking trips on campus.

Finally, Planning Strategies described under Impact 4.9-1, above, would also contribute to consistency with this policy. PS Transportation 1 through 5 would encourage the use of alternative forms of transportation. PS Transportation 6 would implement parking management measures such as restricted permit availability, restricted permit mobility, and differential permit pricing. Thus, for these reasons, the proposed 2005 LRDP Amendment 2 is consistent with this policy.

Southern California Association of Governments Regional Transportation Plan (RTP)

The RTP is a multimodal plan that provides a basic policy and program framework for improving the balance between land uses and transportation systems. The 2008 RTP links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socioeconomic, geographic, and commercial limitations. The discussion below evaluates the consistency of the proposed 2005 LRDP Amendment 2 with relevant RTP goals.

Goa1 1 Maximize mobility and accessibility for all people and goods in the region

Consistency Analysis. As discussed above, development on the West Campus would tie into existing public transit and shuttle service. In addition, development on the West Campus would tie into the future bicycle and pedestrian system planned for the West Campus, thus giving students, researchers, faculty, and staff opportunities to utilize alternative means of transportation to travel to and from the West Campus. Thus, the proposed 2005 LRDP Amendment 2 is consistent with this policy.

Goal 2 Ensure travel safety and reliability for all people and goods in the region

Consistency Analysis. All modes of public and commercial transit serving the West Campus would be required to follow federal and state safety standards. Pedestrian walkways and bicycle routes must follow safety precautions established by the University. Roadways for motorists must follow federal and State safety standards. Thus, the proposed 2005 LRDP Amendment 2 is consistent with this policy.

Goal 3 Preserve and ensure a sustainable regional transportation system

Consistency Analysis. All new roadway developments and improvements to the existing networks will be assessed with a traffic impact study to determine how the developments would impact existing traffic capacities and to determine the needs for improving future traffic capacities. As a result, the proposed 2005 LRDP Amendment 2 is consistent with this policy.

Goal 4 Maximize the productivity of our transportation system

Consistency Analysis. As discussed above, the proposed SOM would encourage efficiency and productivity of the transportation system by implementing UCR's TDM program. TDM measures, such as ridesharing, riding the bus, walking, bicycling, or telecommuting, in turn would increase the carrying capacity of roadways and transit systems by lowering the number of trips made by single-occupant vehicles. Therefore, the proposed 2005 LRDP Amendment 2 is consistent with this policy.

Goal 5 Protect the environment, improve air quality and promote energy efficiency

Consistency Analysis. Continued implementation of UCR's TDM program by the SOM and the operation of the shuttle service between the West Campus and East Campus would reduce the number of vehicle trips on area and campus roadways and in turn reduce the amount of automobile emissions, thus improving air quality. In addition, UCR will continue to implement numerous PPs and PSs that are focused on protecting the environment and promoting energy efficiency by constructing LEED certified buildings, implementing a Climate Action Plan, and implementing measures to minimize pollutant emissions from construction projects. As a result, the proposed 2005 LRDP Amendment 2 is consistent with this policy.

Goal 6 Encourage land use and growth patterns that complement our transportation investments and improve the cost-effectiveness of expenditures

Consistency Analysis. Development anticipated under the proposed 2005 LRDP Amendment 2 would be accessible via transit, bicycle and walking, thus complementing existing investments in public transportation and bicycle and walking infrastructure (i.e., sidewalks and pathways). Thus, the proposed Amendment 2 to the 2005 LRDP is consistent with this policy.

Southern California Association of Governments Compass Growth Vision Report (CGV)

The discussion below evaluates the consistency of the proposed 2005 LRDP Amendment 2 with the Compass Blueprint Growth Vision Report, which aims to improve the mobility, livability, and prosperity of a region. These principles are also known as the 2 percent Strategy Area Principles.

Principle 1 Improve mobility for all residents

- **Encourage transportation investments and land use decisions that are mutually supportive.**
- **Locate new housing near existing jobs and new jobs near existing housing.**
- **Promote a variety of travel choices.**

Consistency Analysis. As discussed above, development anticipated under the proposed 2005 LRDP Amendment 2 would be accessible via transit, bicycle, and walking. In addition, development that would occur under the proposed Amendment 2 to the 2005 LRDP, particularly the proposed SOM, would have access to nearby planned housing that would accommodate students and visiting faculty and staff, thus locating new classrooms and jobs within the West Campus in close proximity of existing and new

housing. Finally, UCR has successfully implemented a comprehensive TDM Program that offers a broad range of services to encourage and assist UCR commuters in utilizing alternatives to the single-occupancy vehicle. Refer to **Section 4.14, Transportation/Traffic**, for a detailed discussion of the TDM Program. Therefore, the proposed 2005 LRDP Amendment 2 is consistent with this principle.

Principle 2 Foster livability in all communities

- **Promote developments which provide a mix of uses.**
- **Promote "people scaled" or "walkable" communities.**
- **Support the preservation of stable, single-family neighborhoods.**

Consistency Analysis. The proposed SOM involves a mix of complementary uses including medical education and administration, medical research, ambulatory care, and medical office uses that would be located adjacent to residential and academic uses. The proposed SOM would also tie into the planned pedestrian circulation system for the West Campus thereby promoting walkability between the West Campus and the East Campus. Finally, implementation of the proposed 2005 LRDP Amendment 2 would occur entirely within campus boundaries and would not directly or indirectly impact existing single-family neighborhoods on the west side of Chicago Avenue (refer to the discussion of land use compatibility provided under **Impact 4.9-1**). Therefore, the proposed amendment to the 2005 LRDP is consistent with this principle.

Principle 3 Enable prosperity for all people

- **GV P3.1 Provide in each community a variety of housing types to meet the housing needs of all income levels.**
- **GV P3.2 Support educational opportunities that promote balanced growth.**
- **GV P3.3 Ensure environmental justice regardless of race, ethnicity, or income class.**
- **GV P3.4 Support local and state fiscal policies that encourage balanced growth.**
- **GV P3.5 Encourage civic engagement.**

Consistency Analysis. UCR provides both on- and off-campus housing options with a range of pricing to meet the needs of all income levels. On- and off-campus housing options consist of residence halls, campus apartments, and family housing. In addition, there are several meal plans to choose from to meet dietary and budgetary needs.

UCR created the position of the Associate Vice Chancellor, Diversity, Excellence and Equity (AVCDEE) in response to the growing awareness of the educational benefit of diversity for all students, faculty, and staff. The AVCDEE is the chief diversity officer and leader of UCR's initiatives to promote diversity as a means to academic excellence, multicultural understanding and professional competence. Included in the AVCDEE's charge are assisting and monitoring all units of the campus in their efforts to recruit and retain diverse faculty, staff, and student body, as well as planning, implementing and overseeing development of programs and activities to support the culture of open inquiry, pluralism, mutual respect and engagement throughout the campus.

UCR engages the Riverside community through numerous programs offered through the Vice Chancellor of Student Affairs and the Gluck programs through the College of Arts, Humanities and Social Sciences to name a few. In addition, UCR learning opportunities are available to the public through the University Extension (lifetime learning), the Botanic Garden, and the Cooperative Extension. Finally, concerts and lectures on campus are available to the Riverside community. All of these programs for the campus and the Riverside community would not be altered or in any way reduced by the proposed LRDP amendment. In fact the development of a medical school would expand the range of programs and services available to the community. For these reasons, the proposed 2005 LRDP Amendment 2 is consistent with this principle.

Principle 4 Promote sustainability for future generations

- **GV P4.2 Focus development in urban centers and existing cities.**
- **GV P4.3 Develop strategies to accommodate growth that uses resources efficiently, eliminate pollution and significantly reduce waste.**
- **GV P4.9 Utilize "green" development techniques.**

Consistency Analysis. On July 17, 2003, the University of California adopted policies on sustainable practices that were expanded in 2005 and again in 2006 to what is now formally known as the "UC Policy on Sustainable Practices," which was adopted in March 2007 and was most recently updated in 2009. The UC Policy commits the 10 UC campuses to minimizing their individual impacts on the environment and reducing their independence on non-renewable energy. The UC Policy addresses sustainable practices in the following seven areas: Green Building Design, Clean Energy Standard, Climate Protection Practices, Sustainable Transportation Practices, Sustainable Operations, Recycling and Waste Management, and Environmentally Preferable Purchasing Practices and Sustainable Food Service Practices. Additional areas being explored for potential future inclusion on campus relate to community garden/education programs and an on-campus green and food waste recycling program. UCR's compliance with the UC Policy on Sustainable Practices is further discussed in **Section 4.16, Greenhouse Gas Emissions**. The

proposed 2005 LRDP Amendment 2 is consistent with the UC sustainability policy and is therefore consistent with this CGV principle.

Regional Water Quality Control Board, Water Quality Control Plan (Santa Ana Basin Plan)

The Santa Ana Basin Plan, implemented by the Santa Ana RQWCB, specifically, (1) designates beneficial uses for surface and ground waters, (2) sets narrative and numerical objectives that must be attained and maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, and (3) describes implementation programs to protect all waters in the region. In cases where the Basin Plan does not contain a standard for a particular pollutant, other criteria are used to establish a standard. Stormwater runoff from the campus originates upstream from the Box Springs Mountains watershed. Runoff from the campus eventually flows to the Santa Ana River.

Consistency Analysis. The campus is situated over the Riverside-Arlington Groundwater subbasin. However, as noted in the Initial Study, the campus is not a significant source of groundwater recharge to the Basin. The Campus is required to comply with all applicable water quality requirements established by the Santa Ana RWQCB and SWRCB. Therefore, new development on the campus under the proposed 2005 LRDP Amendment 2 would be consistent with the Basin Plan and the Porter-Cologne Water Quality Control Act.

Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP)

Although sections of Cells 634 and 719 of the MSHCP do include portions of the campus, the plan does not identify any portion of the UCR for conservation.

Consistency Analysis. Furthermore, lands affected by the proposed 2005 LRDP Amendment 2, including the *SOM* site, the sites of the two relocated parking structures, land designated for West Campus open space, and the Campus Reserve site, are not located within the boundaries of the Western Riverside County MSCHP. Therefore, implementation of the proposed Amendment 2 to the 2005 LRDP would not conflict with the MSHCP.

South Coast Air Quality Management District, Air Quality Management Plan (AQMP)

The future air quality levels projected in the 2007 AQMP are based on several assumptions. For example, the SCAQMD assumes that general new development within the Basin will occur in accordance with population growth and transportation projections identified by SCAG in its most current version of the

RCP. The AQMP also assumes that general development projects will include strategies (i.e., mitigation measures) to reduce emissions generated during construction and operation.

Consistency Analysis. Consistency with the projections of employment and population forecasts identified in the RCP constitutes consistency with the AQMP growth projections, since the RCP forms the basis of the land use and transportation control portions of the AQMP. The City of Riverside includes campus growth in its growth projections. The projected growth in campus population by 2020 is within the SCAG projections for the City of Riverside. Therefore, the 2005 LRDP population increase would be consistent with AQMP attainment forecasts.

Another measurement tool in determining consistency with the AQMP is to determine how a project accommodates the expected increase in population or employment. Generally, if a project is planned in a way that results in the minimization of vehicle miles traveled (VMT) both within the project and the community in which it is located, and consequently the minimization of air pollutant emissions, that aspect of the project is consistent with the AQMP.

As noted above with regard to Policies OSC-8 and OSA-7 of the RCP, the proposed 2005 LRDP Amendment 2 would utilize existing roadway infrastructure and public service systems and represents infill development on a developed campus. The campus is centrally located to activity centers throughout the Southern California region, connected by an extensive transportation network. UCR has implemented a TDM Program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling. The proposed Amendment 2 to the 2005 LRDP contains specific planning objectives aimed at reducing vehicle miles traveled, providing alternative methods of transportation, and integrating walkways with building design to encourage use through placement and design. These programs are consistent with the goals of the AQMP for reducing the emissions associated with new development.

This EIR fully addresses air quality impacts resulting from campus development under the proposed Amendment 2 to the 2005 LRDP and recommends Mitigation Measures 4.3-1 and 4.3-2 (See **Section 4.3, Air Quality**) to reduce the potentially significant impacts. Based on this information, the proposed 2005 LRDP Amendment 2 is consistent with the 2007 AQMP. AQMP consistency is also discussed in **Section 4.3, Air Quality**.

As the proposed 2005 LRDP Amendment 2 would not conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect, impacts on land use would be less than significant.

Mitigation Measures: No mitigation is required.

4.9.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative land use and planning impacts includes the portions of the City of Riverside immediately surrounding the West Campus, which contains a mix of land uses, including commercial, residential, industrial, and institutional. The analysis accounts for all anticipated cumulative growth within this geographic area, as represented by full implementation of the City of Riverside General Plan.

Impact 4.9-3 **Cumulative development, including the proposed 2005 LRDP Amendment 2, would not result in the development of land uses that are substantially incompatible with existing or planned land uses adjacent to the campus. The contribution of the campus development under the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.**

As discussed above in the Environmental Setting, land around the campus is largely built out. Land uses surrounding the campus are primarily residential, with some commercial uses along major streets, with University Avenue as the primary commercial corridor between the UCR campus and downtown Riverside. It is anticipated that growth within the City would result in changes to the existing land use environment through the conversion of vacant land and low density uses to higher density uses, or through conversions of existing land uses (e.g., from residential to commercial). To the extent that there are any changes to land uses surrounding the campus, those would occur as the result of redevelopment and infill. It is reasonable to assume that future development in the vicinity of the campus would be consistent with applicable City of Riverside General Plan and zoning requirements or subject to an allowable exception, and further subject to CEQA, mitigation requirements, and design review. Based on the City General Plan land use designations for lands surrounding the campus, it is expected that by and large the same types of land uses would continue in the lands adjacent to the campus following redevelopment, and future development around campus would generally be compatible with the commercial and residential character of the area. It is possible that cumulative impacts on land use compatibility might occur with respect to one or more individual projects due to specific issues associated with these projects or their location. However, the contribution of the proposed 2005 LRDP Amendment 2 to any cumulative impact would not be cumulatively considerable as development that would occur under the proposed Amendment 2 to the 2005 LRDP would be compatible with surrounding land uses. The impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.9-4 **Cumulative development, including the proposed 2005 LRDP Amendment 2, would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the development. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.**

Future non-University development off-campus would be reviewed for consistency with adopted land use plans and policies by the City of Riverside, in accordance with the requirements of CEQA, the State Zoning and Planning Law, and the State Subdivision Map Act, all of which require findings of plan and policy consistency prior to approval of entitlements for development. For this reason, impacts associated with inconsistency of future non-University development off-campus with adopted plans and policies would not be significant. Even if the cumulative land use impact of future development would be significant, the contribution of the proposed 2005 LRDP Amendment 2 to such impacts would not be cumulatively considerable. For reasons presented in **Impact 4.9-3** above, development under the proposed Amendment 2 to the 2005 LRDP would be compatible with the off-campus land uses that surround it, in light of the continuation of the existing educational land use, and the campus' geographical separation from related projects The impact would be less than significant.

Mitigation Measures: No mitigation is required.

4.9.5 REFERENCES

City of Riverside. 2007. City of Riverside 2025 General Plan, November.

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SCAG. 2004. Southern California Compass Growth Vision Report, June.

University of California, Riverside (UCR). 2005. Long Range Development Plan Final Environmental Impact Report. SCH No. 2005041164.

4.10 NOISE

4.10.1 INTRODUCTION

This section describes existing noise conditions on the UCR campus and evaluates the potential noise impacts resulting from implementation of the 2005 LRDP as amended by the proposed Amendment 2. The proposed Amendment 2 to the 2005 LRDP involves changes to the campus land use plan focused on the West Campus and does not propose any specific development projects. Therefore, this section analyzes the general effects of future development on the West Campus, including the potential for substantial temporary and/or permanent increases in ambient noise levels within or around the campus or exposure of people to excessive noise levels or vibration.

Data used in the preparation of this section were taken from various sources, including the traffic report prepared for the proposed project, and were also obtained by modeling existing and future noise levels at the campus and in the surrounding area. Bibliographic entries for reference materials appear in **Subsection 4.10.5, References**.

In response to the Notice of Preparation issued for this EIR, a member of the public requested that UCR consider the noise impacts of the proposed project on off-campus receptors, as well as the impacts of off-campus development on on-campus receptors. The scoping comment was considered in the analysis presented below.

4.10.2 EXISTING CONDITIONS

4.10.2.1 Characteristics of Noise

Noise is usually defined as unwanted sound that is disturbing or annoying. It is an undesirable by-product of society's normal day-to-day activities. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, and/or when it has adverse effects on health. The objectionable nature of sound may be caused by its pitch, its loudness, or both. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (i.e., frequency) of the vibrations by which it is produced. Higher-pitched signals sound louder to humans than sounds with a lower pitch. Loudness is the amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A decibel (dB) is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the

healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a tenfold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its decibel level. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms for noise are defined in **Table 4.10-1, Definitions of Acoustical Terms**.

Table 4.10-1
Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dB(A)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, Leq	The average A-weighted noise level during the measurement period. The hourly Leq used for this report is denoted as dB(A) Leq[h].
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 PM to 10:00 PM and after addition of 10 decibels to sound levels in the night between 10:00 PM and 7:00 AM.
Day/Night Noise Level, Ldn	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 PM and 7:00 AM.
L01, L10, L50, L90	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

There are several methods of characterizing sound. The most common in California is the A-weighted sound level, referenced in units of dB(A).[1] This method is used because sound pressure level alone is not a reliable indicator of loudness, as the human ear does not respond uniformly to sounds at all

1 All sound levels discussed in this section use the A-weighting scale.

frequencies. For example, it is less sensitive to low and high frequencies than to the medium frequencies that more closely correspond to human speech. The A-weighted noise level was developed to better correspond with peoples' subjective judgment of sound levels. In general, changes in community noise levels of less than 3 dB(A) are not typically noticed by the human ear (FHA 1980). Changes from 3 to 5 dB(A) may be noticed by some individuals who are especially sensitive to changes in noise. An increase greater than 5 dB(A) is readily noticeable, while, as noted above, the human ear perceives a 10 dB(A) increase in sound level to be a doubling of sound volume. A doubling of sound wave energy (for example, from doubling the volume of traffic on a roadway) would result in a 3 dB increase in sound, a barely perceptible change in sound level. Common noise levels associated with certain activities are shown on **Figure 4.10-1, Common Noise Levels**.

Noise sources occur in two forms: (1) point sources, such as stationary equipment or individual motor vehicles; and (2) line sources, such as a roadway with a large number of point sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6.0 dB(A) for each doubling of distance from the source to the receptor at acoustically "hard" sites and 7.5 dB at acoustically "soft" sites.[2] For example, a 60 dB(A) noise level measured at 50 feet from a point source at an acoustically hard site would be 54 dB(A) at 100 feet from the source and 48 dB(A) at 200 feet from the source. Sound generated by a line source typically attenuates at a rate of 3.0 dB(A) and 4.5 dB(A) for each doubling of distance from the source to the receptor for hard and soft sites, respectively. Sound levels can also be attenuated by man-made or natural barriers (e.g., sound walls, berms, ridges), as well as elevation differences.

Wall/berm combinations may reduce noise levels by as much as 10.0 dB(A) depending on their height and distance relative to the noise source and the noise receptor (US Department of Transportation 1980b). Sound levels may also be attenuated 3.0 to 5.0 dB(A) by a first row of houses and 1.5 dB(A) for each additional row of houses. The minimum noise attenuation provided by typical building construction in California is provided in **Table 4.10-2, Outside to Inside Noise Attenuation**.

When assessing community reaction to noise, there is an obvious need for a scale that averages varying noise exposures over time and that quantifies the result in terms of a single number descriptor. Several scales have been developed that address community noise level. Those that are applicable to this analysis are the Equivalent Noise Level (Leq), the Day-Night Noise Level (Ldn), and the Community Noise Equivalent Level (CNEL).

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2 Examples of "hard" or reflective sites include asphalt, concrete, and hard and sparsely vegetated soils. Examples of acoustically "soft" or absorptive sites include soft sand, plowed farmland, grass, crops, or heavy ground cover.

- L_{eq} is the average A-weighted sound level measured over a given time interval. L_{eq} can be measured over any period, but is typically measured for 1-minute, 15-minute, 1-hour, or 24-hour periods.

Table 4.10-2
Outside to Inside Noise Attenuation (dB(A))

Building Type	Open Windows	Closed Windows
Residences	17	25
Schools	17	25
Churches	20	30
Hospitals/Convalescent Homes	17	25
Offices	17	25
Theaters	20	30
Hotels/Motels	17	25

Source: Transportation Research Board, National Research Council, Highway Noise: A Design Guide for Highway Engineers, National Cooperative Highway Research Program Report 117.

- L_{dn} is a 24-hour L_{eq} with a "penalty" of 10 dB added during the nighttime hours (10:00 PM to 7:00 AM), which is typically sleeping time.

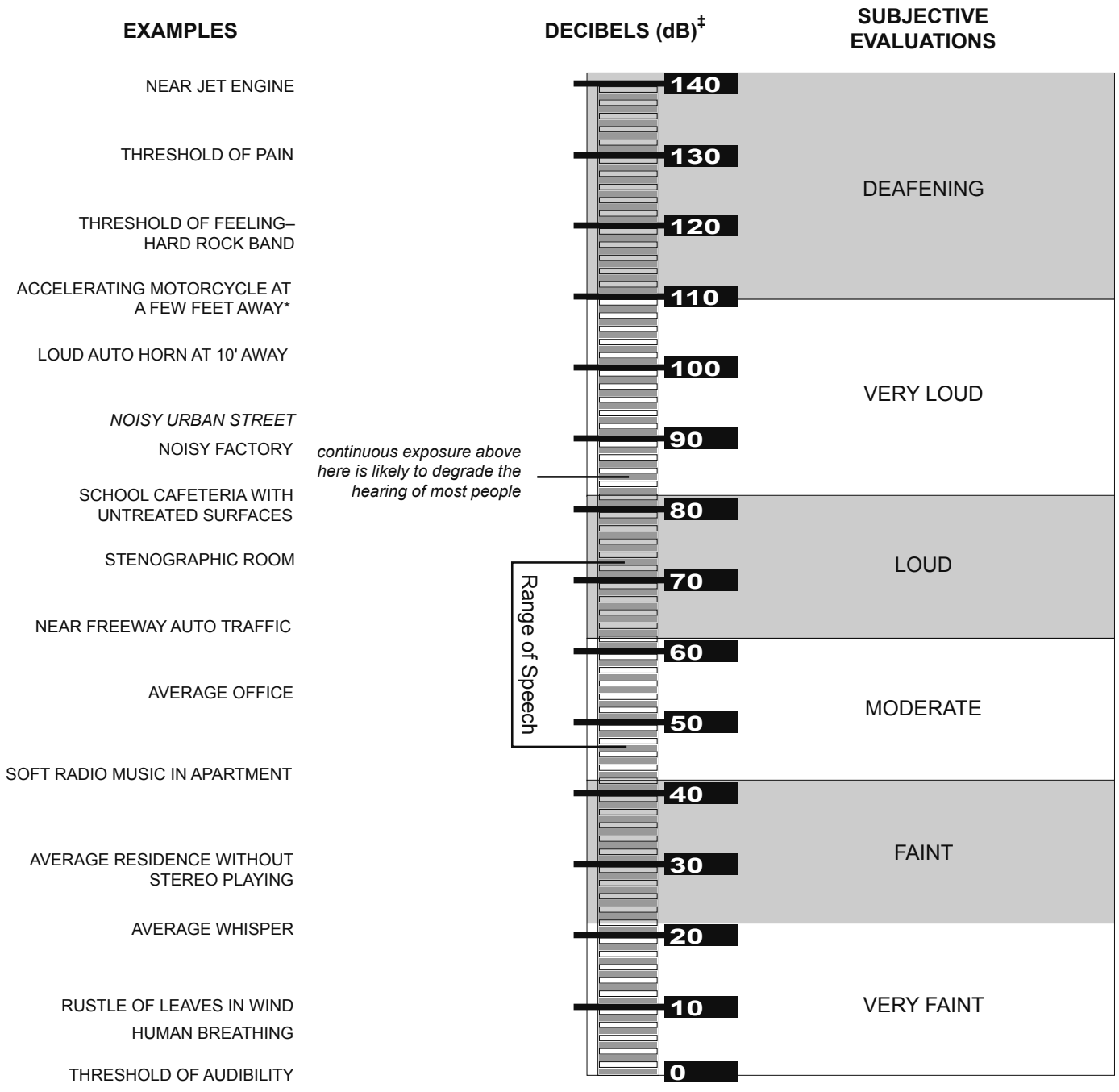
- CNEL is another average A-weighted sound level measured over a 24-hour period. However, the CNEL noise scale is adjusted to account for some individuals' increased sensitivity to noise levels during the evening as well as the nighttime hours. A CNEL noise measurement is obtained after adding a "penalty" of 5 dB to sound levels occurring during the evening from 7:00 PM to 10:00 PM, and 10 dB to sound levels occurring during the nighttime from 10:00 PM to 7:00 AM.[3]

4.10.2.2 Characteristics of Vibration

Vibration is minute variation in pressure through structures and the earth, whereas noise is minute variation in pressure through air. Thus, vibration is felt rather than heard. Some vibration effects can be caused by noise, e.g., the rattling of windows from truck pass-bys. This phenomenon is related to the production of acoustic energy at frequencies that are close to the resonant frequency of the material being vibrated. Groundborne vibration attenuates rapidly as distance from the source of the vibration increases.

Vibration can be measured as particle velocity in inches per second and referenced as vibration decibels (VdB). The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or the slamming of doors.

3 The logarithmic effect of adding these penalties to the peak-hour L_{eq} measurement results in a CNEL measurement that is within approximately 3 dB(A) (plus or minus) of the peak-hour L_{eq}. California Department of Transportation, *Technical Noise Supplement; A Technical Supplement to the Traffic Noise Analysis Protocol*, October 1998, pp. N51-N54.



** NOTE: 50' from motorcycle equals noise at about 2000' from a four-engine jet aircraft.*

‡NOTE: dB are "average" values as measured on the A–scale of a sound–level meter.

FIGURE **4.10-1**

Common Noise Levels

Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is barely perceptible. The range of interest is from approximately 50 VdB, which is typical background vibration velocity, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

Figure 4.10-2, Typical Levels of Ground-Borne Vibration, identifies the typical groundborne vibration levels in VdB and human response to different levels of vibration.

4.10.2.3 Noise-Sensitive Land Uses Within and Adjacent to the Campus

Existing noise-sensitive residential land uses in the vicinity of the West Campus include single-family residential uses located to the west and southwest of Chicago Avenue and several multi-family residential uses located to the north of the West Campus boundaries between University Avenue and Everton Place. Existing noise-sensitive off-campus commercial land uses in the vicinity of the West Campus include a motel located to the north along University Avenue. Existing noise sensitive land uses on the West Campus include the UCR International Village, a student apartment complex located on the south side of Everton Place.

Existing noise-sensitive residential uses in the vicinity of the East Campus include single-family residential uses to the north of Blaine Street and to the east of Valencia Hill Drive. Existing noise sensitive land uses on the East Campus include the Canyon Crest Family Housing complex located on the south side of Blaine Street, student residence halls located to the west of Valencia Hill Drive, and Falkirk and Oban housing complexes located west of Canyon Crest Drive north and south of Linden Street, and the UCR Child Development Center on Watkins Drive near Blaine Street.

4.10.2.4 Existing Noise Levels

Existing Roadway Noise Levels

The existing ambient noise levels were estimated for the roadways on and near the West Campus based on average daily trips provided in the traffic study prepared for this project. The traffic noise was modeled using the Federal Highway Administration Highway (FHWA) Highway Noise Prediction Model (FHWA-RD-77-108). The results of the noise modeling are presented in **Table 4.10-3, Existing Roadway Modeled Noise Levels.** As shown, the modeled roadway noise levels range from a low of 63.8 dB(A) CNEL on Iowa Avenue from MLK to University Avenue to a high of 66.5 dB(A) CNEL on MLK/14th Street from Canyon Crest Drive to Iowa Avenue. It should be noted that actual noise levels along these roadways are likely higher than the modeled levels due to the contribution of noise from other non-traffic sources. However, traffic is the dominant noise source in the area.

Table 4.10-3
Existing Roadway Modeled Noise Levels

Roadway Segment/Intersection	CNEL at 75 Feet	Distance to Noise Contour [a]		
		70 CNEL	65 CNEL	60 CNEL
MLK/14th Street				
Canyon Crest Drive to Iowa Avenue	66.5	-- [b]	104	325
Iowa Avenue to Chicago Avenue	66.0	-- [b]	94	293
Chicago Avenue				
MLK to University Avenue	65.4	-- [b]	83	258
University Avenue to Blaine Street	65.2	-- [b]	79	244
University Avenue				
I-215 to Iowa Avenue	66.1	-- [b]	96	299
Iowa Avenue to Chicago Avenue	66.0	-- [b]	94	294
Iowa Avenue				
MLK to University Avenue	63.8	-- [b]	-- [b]	176
University Avenue to Blaine Street	65.7	-- [b]	88	274

Source: Impact Sciences. Model results are contained in ***Appendix 4.10****.*

a Distances are in feet from roadway centerline. The identified noise level at 75 feet from the roadway centerline is for reference purposes only as a point from which to calculate the noise contour distances. It does not reflect an actual building location or potential impact location.

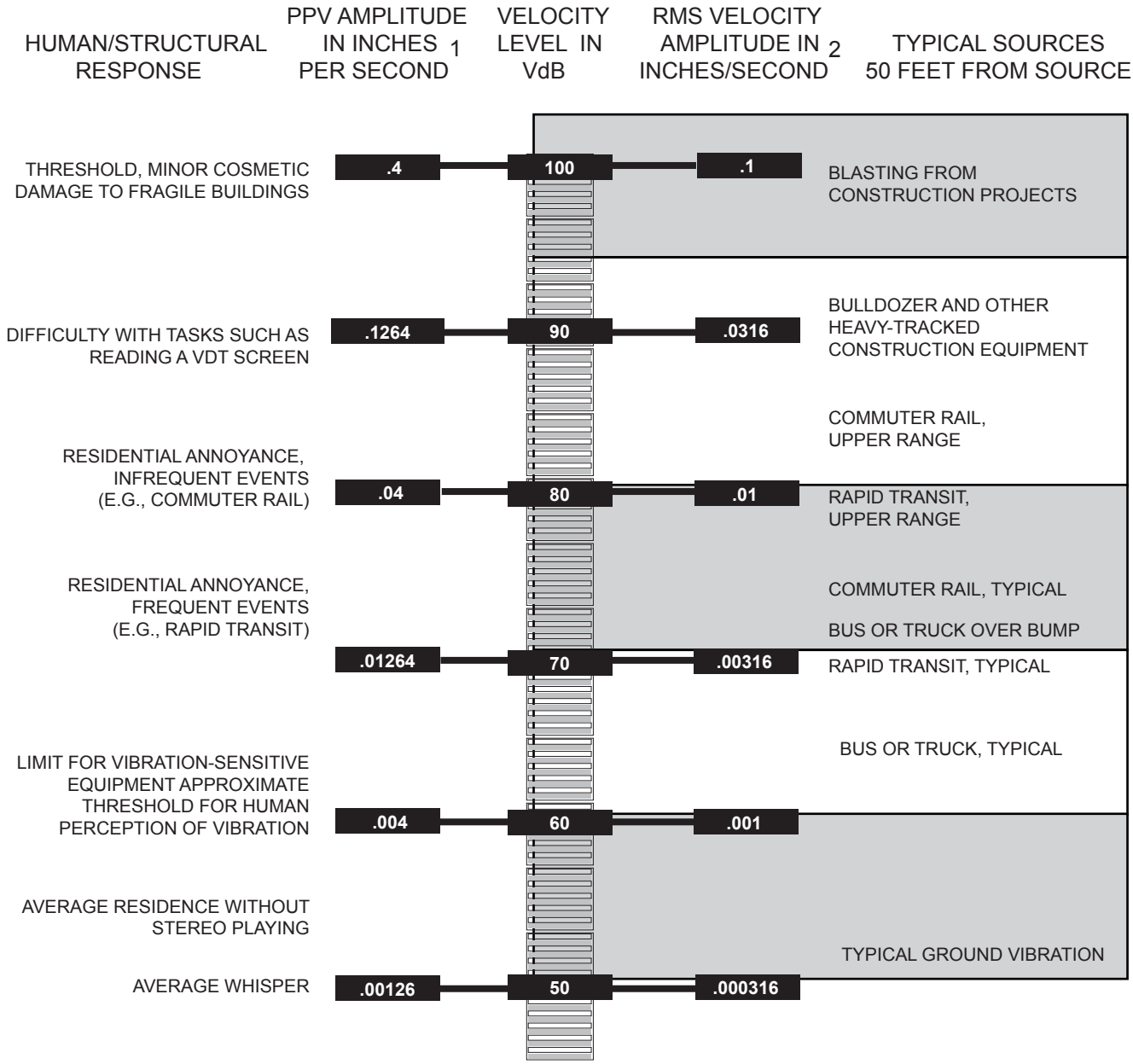
b Noise contour is located within the roadway right-of-way.

Railroad Noise

BSNF railroad tracks are located along the northern border of the East Campus and produce noise from train pass-bys. Noise measurements taken at 396 East Big Springs Road, located 0.5 mile to the northeast of the campus, and at 277 Nisbet Way, located approximately 500 feet to the east of the campus, range from 54 dB(A) at 125 feet from the tracks to 62 dB(A) at 90 feet from the tracks, respectively (RCTC 2010).

Construction Noise

Construction of new facilities occurs on an ongoing basis on the UCR campus. Noise is generated daily by these activities, although it is primarily isolated in the immediate vicinity of each construction site. The actual noise levels generated by construction vary by site and on a daily and hourly basis, depending on the activity that is occurring and the types and number of pieces of equipment that are operating.

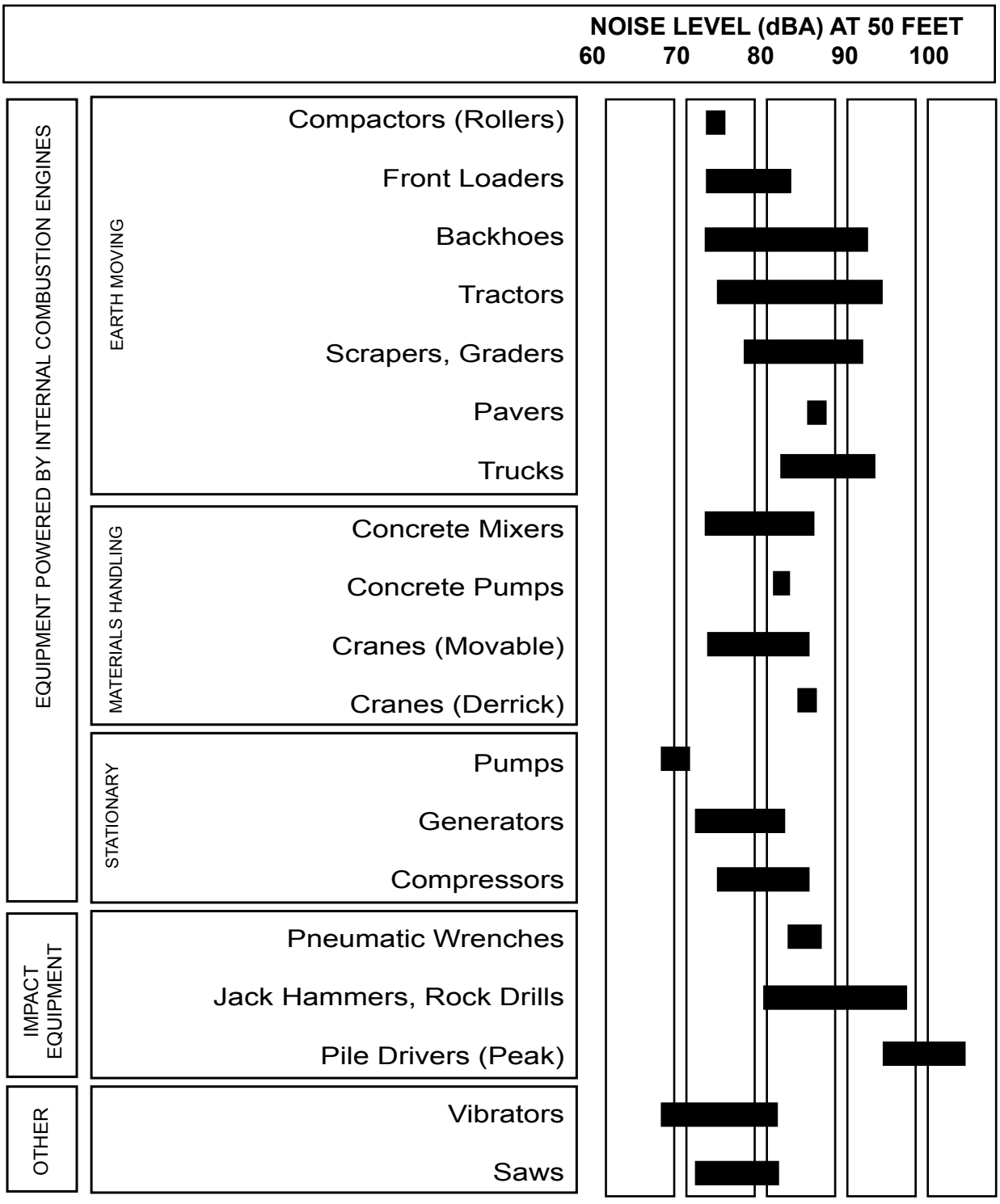


[1] PPV is typically a factor 1.7 to 6 times greater than RMS vibration velocity. A factor of 4 was used to calculate noise levels.

[2] Vibration levels in terms of velocity levels are defined as: $V=20 \times \log_{10} (a/r)$
V=velocity levels in decibels
a=RMS velocity amplitude
r=reference amplitude (accepted reference quantities for vibration velocity are 1×10^{-6} inches/second in the United States)

FIGURE **4.10-2**

Typical Levels of Ground-Borne Vibration



NOTE: Based on limited available data samples.

SOURCE: United States Environmental Protection Agency, 1971, "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," NTID 300-1

FIGURE **4.10-3**

Noise Levels of Typical Construction Equipment

Equipment used during construction generates both steady state and episodic noise that would be heard both on and off campus. The US Department of Transportation has compiled data regarding the noise-generating characteristics of specific types of construction equipment; these are presented in **Figure 4.10-3, Noise Levels of Typical Construction Equipment**. As shown, noise levels generated by heavy equipment can range from approximately 73 dB(A) to noise levels in excess of 80 dB(A) when measured at 50 feet.

4.10.2.5 Existing Campus Noise Control

UCR implements numerous programs to reduce on-campus noise levels and motor vehicle trips (thereby reducing associated off-campus noise levels). These programs are discussed below.

Stationary Source Noise Controls

As described in the 2005 LRDP EIR, in order to provide a relatively quiet environment on the campus that is conducive to the educational process, in compliance with campus Practices and Programs (PPs) and Planning Strategies (PSs) identified in the "impacts" portion of this section, noise-generating uses such as truck accesses, parking areas, mechanical heating and ventilation, and refrigeration units are designed and evaluated when planning specific individual new facilities to minimize the potential for noise impacts to adjacent developments. In addition, building setbacks, building design, and site orientation are used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes.

Land Use Buffering

UCR includes a landscaped buffer along the east edge of the East Campus and the south edge of the West Campus (Valencia Hill Drive Landscape Buffer Area and Martin Luther King Boulevard Landscape Buffer Area, respectively). These buffers maintain setbacks between on-campus uses and the surrounding area and provide an acoustically soft environment to reduce noise levels. They also reduce the effect of noise generated in the surrounding area (primarily roadway noise) on the campus. Likewise, they reduce the noise levels in the surrounding area due to noise generated on the campus.

Construction Noise Controls

When necessary, UCR limits the hours of exterior construction activities from 7:00 AM to 9:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Saturday. Transportation routes are established for each construction project to minimize the impacts of construction traffic (including noise impacts) on the surrounding community.

Vehicular Traffic Noise Controls

As described in the 2005 LRDP EIR, UCR is served by several modes of alternative transportation, including public bus services and a shuttle bus service. UCR also implements an Alternative Transportation program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling. The goal of the program is to reduce the total number of vehicle trips made to campus by faculty, staff, and students. This goal serves the California clean-air effort and reduces campus and community vehicle congestion. Program-related services are available to UCR faculty, staff, and students. While transportation programs are not implemented specifically to reduce noise levels, they do have the positive effect of reducing the number of motor vehicle trips that might otherwise be generated in association with UCR. By reducing the number of potential motor vehicle trips, the potential noise levels that could be experienced in the surrounding vicinity are, likewise, reduced.

4.10.2.6 Existing Groundborne Vibration Environment

The primary regular sources of groundborne vibration at the campus and within the immediate vicinity are construction activities, roadway truck traffic and train pass-bys along the railroad tracks located along the northern border of the East Campus. (Seismic events also cause vibration, but occur sporadically and are unpredictable in nature.) **Table 4.10-4, Vibration Levels for Construction Equipment**, identifies various vibration velocity levels for the types of construction equipment that is used on campus.

Table 4.10-4
Vibration Levels for Construction Equipment

	Approximate VdB			
Equipment	**25 Feet**	**50 Feet**	**75 Feet**	**100 Feet**
Large Bulldozer	87	81	77	75
Loaded trucks	86	80	76	74
Jackhammer	79	73	69	67
Small Bulldozer	58	52	48	46

Source: Federal Railroad Administration, 2005.

Heavy trucks that transport materials to and from the construction sites within the campus typically generate groundborne vibration velocity levels of around 63 VdB. These levels could reach 72 VdB where trucks pass over bumps in the road. Based on measurements taken at 396 East Big Springs Road, train pass-bys on the BNSF railroad tracks north of the campus produce on average a vibration level of 58 VdB at a distance of 50 feet from the tracks (RCTC 2010).

4.10.3 REGULATORY FRAMEWORK

4.10.3.1 Federal

There are no federal noise standards that are applicable to the UCR campus.

4.10.3.2 State

Title 24 of the California Code of Regulations codifies Sound Transmission Control requirements, which establish uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings. Specifically, Title 24 states that interior noise levels attributable to exterior sources shall not exceed 45 dB(A) CNEL in any habitable room of new dwellings. Dwellings are to be designed so that interior noise levels will meet this standard for at least 10 years from the time of building permit application. This standard applies to all new student housing developed on the UCR campus.

4.10.4 PROJECT IMPACTS AND MITIGATION MEASURES

4.10.4.1 Significance Criteria

The impacts related to noise from the implementation of the proposed project would be considered significant if they would exceed the following Standards of Significance, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Expose persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinances, or applicable standards of other agencies
- Expose persons to or generation of excessive groundborne vibration or groundborne noise levels
- Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airstrip, expose people residing or working in the project area to excessive noise levels
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels

The State standard for interior noise levels within new dwellings other than detached single-family dwellings, such as student housing, is 45 dB(A) CNEL.

The CEQA Guidelines do not define the levels at which groundborne vibration or groundborne noise is considered "excessive." This analysis uses the Federal Railway Administration's (FRA) vibration impact thresholds for sensitive buildings, residences, and institutional land uses.[4] These thresholds are 65 VdB at buildings where vibration would interfere with interior operations (e.g., sensitive on-campus research buildings), 80 VdB at residences and buildings where people normally sleep (e.g., student housing buildings and nearby residences), and 83 VdB at other institutional buildings (FRA 2005).

The CEQA Guidelines also do not define the levels at which temporary and permanent increases in ambient noise are considered "substantial." For the purposes of this analysis, noise impacts would be considered significant if the project resulted in the following:

- Construction activities lasting more than one day that increase the ambient noise levels by 10 dB(A) Leq or more over a 1-hour period at any on-campus or off-campus noise-sensitive location.
- A permanent (i.e., long-term operational) increase of 5 dB(A) CNEL over ambient noise levels at any on-campus or off-campus noise-sensitive land use.
- A permanent (i.e., long term operational) increase of 3 dB(A) CNEL over ambient noise levels at any on-campus or off-campus noise-sensitive land use location where the future resulting noise level would exceed 70 dB(A) CNEL (i.e., the noise levels would be considered unacceptable for noise-sensitive uses by most public agencies).

4.10.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of issues related to the following standards of significance was not required in the EIR:

- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airstrip, expose people residing or working in the project area to excessive noise levels
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels

The Initial Study for the proposed project noted that the project site is not located within the boundaries of any airport land use plan and is more than 2 miles from the nearest public airport. The project site is not located within the vicinity of a private airstrip. Therefore, implementation of the proposed project

[4] The thresholds are for infrequent events which are defined as fewer than 70 vibration events per day.

would not be affected by operation of a public airport or by a private airstrip. These issues are not discussed further in the analysis below.

4.10.4.3 Methodology

As a conceptual land use plan, the 2005 LRDP as amended by the proposed Amendment 2 would guide the siting of future physical development, but the plan does not commit UCR to any specific projects or the location of those projects. Therefore, the analysis in this section focuses on the nature and magnitude of the potential change in the noise environment due to the probable location of future development, based on the land use plan included in the proposed Amendment 2 to the 2005 LRDP. Impacts from implementation of the 2005 LRDP as amended are evaluated by comparing existing land uses to proposed future land uses to determine whether future development would result in adverse effects related to noise on the West Campus and its surroundings. The primary sources of noise associated with the proposed Amendment 2 to the 2005 LRDP would be construction activities and campus-related increases in traffic volumes. Noise levels associated with anticipated construction activities are identified for locations within and around the campus and are compared with adopted standards to determine whether temporary or periodic noise impacts would occur. Potential increases in noise levels would be associated with increased traffic due to (1) redistribution of existing traffic to reflect changed land-use designations and (2) increases in campus population with development of the School of Medicine and associated increases in traffic. Noise from traffic and from on-campus equipment and activities is identified and compared with standards of significance to determine whether substantial permanent increases in ambient noise levels would occur.

4.10.4.4 Project Impacts and Mitigation Measures

Impact 4.10-1 **Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant 2005 LRDP Planning Strategy and a Program and Practice, would not expose on-campus student residential uses to noise levels in excess of the State's 45 dB(A) CNEL interior noise standard. The impact would be less than significant.**

The addition of about 3.1 million gross square feet of building space associated with the SOM would result in additional vehicular traffic on and around the campus, which in turn would generate increased noise levels. Other sources of noise associated with the SOM could include new stationary sources (such as rooftop heating, ventilation, and air conditioning equipment) and increased human activity throughout the West Campus. Development of the *housing* and *open space* on the Campus Reserve site under the amended 2005 LRDP would cause redistribution of the traffic patterns anticipated under the

2005 LRDP, as could the relocation of two planned parking garages. These two elements of the proposed 2005 LRDP Amendment 2, as well as the reconfiguration of West Campus open space, would not generate increased traffic and traffic-related noise levels above levels analyzed in the 2005 LRDP EIR. However, the redistribution of traffic associated with the amended 2005 LRDP could result in increased traffic noise at certain locations. The remaining elements of the proposed 2005 LRDP Amendment 2 are programmatic in nature and would not generate increased traffic and traffic-related noise levels.

Future noise levels within the campus would continue to be dominated by vehicular traffic on adjacent roadways. **Table 4.10-5, Existing – 2020 Plus Project Roadway Modeled Noise Levels**, presents the modeled future average daily noise levels associated with these roadways. Other sources of noise would include train pass-bys along the BSNF railroad tracks located along the northern border of the East Campus, new stationary sources (such as rooftop heating, ventilation, and air conditioning equipment) and increased human activity throughout the campus.

Table 4.10-5
Existing – Project Roadway Modeled Noise Levels

Roadway Segment/Intersection	CNEL at 75 Feet	Distance to Noise Contour [a]		
		70 CNEL	65 CNEL	60 CNEL
MLK/14th Street				
Canyon Crest Drive to Iowa Avenue	68.0	-- [b]	148	461
Iowa Avenue to Chicago Avenue	67.1	-- [b]	121	375
Chicago Avenue				
MLK to University Avenue	66.6	-- [b]	107	331
University Avenue to Blaine Street	66.2	-- [b]	98	305
University Avenue				
I-215 to Iowa Avenue	67.7	-- [b]	139	433
Iowa Avenue to Chicago Avenue	67.3	-- [b]	125	390
Iowa Avenue				
MLK to University Avenue	65.3	-- [b]	81	251
University Avenue to Blaine Street	67.0	-- [b]	119	369

*Source: Impact Sciences. Model results are contained in **Appendix 4.10**.*

a Distances are in feet from roadway centerline. The identified noise level at 75 feet from the roadway centerline is for reference purposes only as a point from which to calculate the noise contour distances. It does not reflect an actual building location or potential impact location.

b Noise contour is located within the roadway right-of-way.

Residential uses proposed under the proposed 2005 LRDP as amended are the residence halls and apartments on the East Campus and the family housing and apartments that would be located on the West Campus, including the Campus Reserve site. As discussed above, while the exterior-to-interior noise reduction of newer residential units constructed in California is generally 30 dB(A) or more, noise

levels within the proposed residential housing buildings could exceed the State's 45 dB(A) CNEL standard if the exterior noise levels average 75 dB(A) CNEL or more. All of the new residential buildings are proposed in areas located beyond the 70 dB(A) CNEL noise contour distances identified in **Table 4.10-5,** and therefore would not be subject to interior noise levels exceeding the State standards.

Concerning railroad noise, development consistent with the amended 2005 LRDP would not site housing along Watkins Drive adjacent to the BNSF railroad tracks. Development along Watkins Drive is complete with the proposed EH&S facility and Parking Lot 27 just to the east and continuing landscaping to Valencia Hill Drive. Future housing in this area of campus will be located south of existing development located along Watkins Drive or on Blaine Street or off of Valencia Hill Drive (Glen Mor 2). Therefore, noise from train pass-bys would not affect planned on-campus housing along the northern boundary of the East Campus.

As described in the 2005 LRDP EIR, mechanical heating, ventilation, and air conditioning (HVAC) equipment would typically be located on the rooftop of each new building or at ground level. The type of equipment currently installed on new buildings within the campus generates noise levels that average around 66 dB(A) Leq on the air inlet side and 62 dB(A) Leq on the other sides when measured at 50 feet from the source. As discussed previously in this section, 24-hour CNEL noise levels are about 6.7 dB(A) greater than 24-hour Leq measurements. This means that this equipment could generate noise levels that average 69 to 73 dB(A) CNEL at 50 feet when the equipment is operating constantly for 24 hours. Based on observations of the existing equipment at existing campus buildings, the shielding installed around all new equipment at the campus reduces these noise levels by at least 15 dB(A). Therefore with shielding, noise from HVAC equipment would not produce noise levels over 70 CNEL and this noise would not adversely affect on-campus housing.

Furthermore, during the planning horizon of the 2005 LRDP as amended by the proposed Amendment 2, future development of the campus would be guided by a range of LRDP Planning Strategies (PS) as necessary. The following LRDP Planning Strategy (PS), which is relevant to the reduction of roadway noise levels at locations on campus, would be implemented as applicable if specific noise analysis for a project implementing the amended 2005 LRDP determined the need to implement landscaped buffers or setbacks and is assumed as part of the proposed project:

PS Open Space 4 — Provide landscaped buffers and setbacks along campus edges, such as Valencia Hills Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, and the I-215/SR-60 freeway.

During the planning horizon of the amended 2005 LRDP, the Campus would continue to implement the following existing campus Program and Practice (PP) as applicable to ensure that potential impacts

associated with construction and building siting and design would be below the significance threshold and is assumed as part of the proposed project:

PP 4.10-1(a) UCR will incorporate the following siting design measures to reduce long-term noise impacts:

(i) Truck access, parking area design, and air conditioning/refrigeration units will be designed and evaluated when planning specific individual new facilities to minimize the potential for noise impacts to adjacent developments.

(ii) Building setbacks, building design and orientation will be used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes, such as Blaine Street, Canyon Crest Drive, University Avenue, and Martin Luther King Jr. Boulevard. Noise walls may be advisable to screen existing and proposed facilities located near the I-215/SR-60 freeway.

(iii) Adequate acoustic insulation would be added to residence halls to ensure that the interior Ldn would not exceed 45 dB(A) during the daytime and 40 dB(A) during the nighttime (10:00 PM to 7:00 AM) in rooms facing major streets.

(iv) Potential noise impacts would be evaluated as part of the design review for all projects. If determined to be significant, mitigation measures would be identified and alternatives suggested. At a minimum, campus residence halls and student housing design would comply with Title 24, Part 2 of the California Administrative Code.

Based on the modeled noise levels, exterior noise levels around the student housing buildings would not approach 75 dB(A) CNEL and, therefore, interior noise levels within these buildings would not exceed 45 dB(A) CNEL. However, to further ensure a less than significant impact, the Campus may implement a relevant Planning Strategy and Program and Practice for specific projects implementing the amended 2005 LRDP if at the time of the proposed specific project, the analysis shows that there is a potential to exceed the significance threshold. Implementation of the amended 2005 LRDP would not result in the exposure of persons to or generation of noise levels in excess of established standards, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.10-2 **Construction associated with the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, could generate and expose persons on campus to excessive groundborne vibration or groundborne noise levels. The impact would be significant.**

The locations of the SOM facilities, the two parking garages, and the West Campus open space were previously considered under the 2005 LRDP and would not result in vibration levels during construction that were not previously considered in the 2005 LRDP EIR. The location of the proposed *housing* and *open space* on the Campus Reserve site was not previously considered under the 2005 LRDP and construction of future projects in this area under the proposed Amendment 2 to the 2005 LRDP could result in vibration levels that were not previously considered. The remaining elements of the proposed 2005 LRDP Amendment 2 are programmatic in nature and would not increase vibration levels.

During the planning horizon of the 2005 LRDP as amended by the proposed Amendment 2, the Campus will continue to implement as applicable the following existing campus Program and Practice (PP) that would reduce potential impacts associated with construction and building siting and design and is assumed as part of the proposed project :

PP 4.10-2 The UCR Campus shall limit the hours of exterior construction activities from 7:00 AM to 9:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Saturday when necessary. Construction traffic shall follow transportation routes prescribed for all construction traffic to minimize the impact of this traffic (including noise impacts) on the surrounding community.

Table 4.10-4 previously identified various vibration velocity levels for the types of construction equipment that would operate at the campus during construction. Construction activities would primarily impact existing buildings within the campus. These buildings could sometimes be as close as 25 feet to the construction site or as far as several hundred feet away. Based on the information presented in **Table 4.10-4**, vibration levels could reach up to 87 VdB at the buildings located within 25 feet of construction. This would exceed the thresholds for each building type. Where construction occurs more than 50 feet from campus classroom buildings, office buildings, and student housing buildings, the impact would be less than significant. In order for construction activities to not potentially impact research buildings containing vibration-sensitive equipment, the activities would need to occur at least 300 feet from the sensitive building. Even with limits on hours of construction where necessary as described in PP 4.10-2, where construction activities occur less than 300 feet from research buildings with vibration-sensitive equipment, the impacts would be significant.

Mitigation Measures: The following mitigation measure (which is the same as Mitigation Measure 4.10-2 in the 2005 LRDP EIR) shall be continued throughout the planning horizon of the 2005 LRDP as amended by the proposed Amendment 2:

MM 4.10-2 The Campus shall notify all academic and residential facilities within 300 feet of approved construction sites of the planned schedule of vibration causing activities so that the occupants and/or researchers can take necessary precautionary measures to avoid negative effects to their activities and/or research.

Significance after Mitigation: MM 4.10-2 represents the best management practice to minimize the impact of groundborne vibration on nearby on-campus facilities during construction. It would not, however, ensure that groundborne vibration does not exceed the identified thresholds of significance for sensitive buildings located in close proximity to the construction sites. Therefore, this impact would be significant and unavoidable.

Impact 4.10-3 **Construction associated with the proposed 2005 LRDP Amendment 2 would not generate and expose persons off campus to excessive groundborne vibration or groundborne noise levels. This is considered a less than significant impact.**

Campus lands affected by the proposed 2005 LRDP Amendment 2, including the *SOM* site, the sites of the two relocated parking structures, land designated for West Campus open space, and the Campus Reserve site, are located near existing residential uses and some noise-sensitive commercial uses. The nearest existing residences to the *SOM* site and the West Campus academic core are private apartment complexes located along the north side of Everton Place. The nearest existing residences to the Campus Reserve site, which is the site of proposed student housing, are located off-campus to the west and southwest across Chicago Avenue. The nearest existing residences to the East Campus are single-family homes located adjacent to the north across Watkins Drive, a railroad track and Department of Water Resources easement. Residences east of the campus are separated from proposed development by a 100 foot landscaped buffer running the length of the Valencia Hill Drive boundary and projected south of Big Springs Road.

Based on the above description, all of the nearest off-campus residential uses are located at least 100 feet from the nearest potential construction sites associated with buildout that could occur under the 2005 LRDP as amended. Based on the information presented in **Table 4.10-4**, vibration levels from on-campus construction activities would be 75 VdB or less at these residential uses.

Heavy trucks would continue to transport materials to and from the campus when construction activities occur. These trucks typically generate groundborne vibration velocity levels of around 63 VdB. These levels could reach 72 VdB where trucks pass over bumps in the road.

In both instances, the resulting groundborne vibration velocity levels would be less than the Federal Railway Administration's 80 VdB vibration impact threshold for residential uses. Therefore, construction associated with the implementation of the amended 2005 LRDP would not expose off-campus persons to excessive groundborne vibration levels, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.10-4 **Operation of campus facilities under the proposed 2005 LRDP Amendment 2 would not generate and expose persons on- or off-campus to excessive groundborne vibration or groundborne noise levels. This is considered a less than significant impact.**

The existing campus facilities are not a major source of vibration. New facilities that would be added to the campus would be similar and their operation and occupancy would not result in vibrations that could expose persons on- or off-campus to excessive groundborne vibration or noise levels. This impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.10-5 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would generate increased local traffic volumes, but the traffic would not cause a substantial permanent increase in noise levels at on- or off-campus locations. The impact would be less than significant.**

As discussed under **Impact 4.10-1** above, potential noise impacts from the implementation of the 2005 LRDP as amended could result from traffic-related noise due to increases in the amount of traffic generated by the campus and some redistribution of traffic under the amended LRDP. Several locations in the vicinity of the campus could experience slight changes in noise levels as a result of increased or redistributed traffic. The changes in modeled future noise levels at selected noise-sensitive locations along the study area roadway segments are identified in **Table 4.10-6, Operational Roadway Noise Levels**. As shown, the changes in motor vehicle trips and circulation patterns would increase local noise levels by a maximum of 0.8 dB(A) CNEL, which is inaudible or imperceptible to most people.

Table 4.10-6
Operational Roadway Noise Levels

Roadway Segment/Intersection	Existing Noise Levels Without Project	Existing Noise Levels Plus Project	Change in Noise Levels	Significant Project Impact
MLK/14th Street				
Canyon Crest Drive to Iowa Avenue	66.5	66.6	0.1	NO
Iowa Avenue to Chicago Avenue	66.0	66.0	0.0	NO
Chicago Avenue				
MLK to University Avenue	65.4	65.7	0.3	NO
University Avenue to Blaine Street	65.2	65.3	0.1	NO
University Avenue				
I-215 to Iowa Avenue	66.1	66.9	0.8	NO
Iowa Avenue to Chicago Avenue	66.0	66.4	0.4	NO
Iowa Avenue				
MLK to University Avenue	63.8	64.1	0.3	NO
University Avenue to Blaine Street	65.7	66.2	0.5	NO

*Source: Impact Sciences. Model results are contained in **Appendix 4.10**.*

Because the roadway noise levels at all on- and off-campus locations would increase by less than 5 dB(A) CNEL, campus development under the amended 2005 LRDP would not generate increased local traffic volumes that cause a substantial permanent on- or off-campus increase in ambient noise levels.

Furthermore, during the planning horizon of the amended 2005 LRDP, the Campus may elect to implement as applicable the following existing campus Programs and Practices (PP) to further reduce campus-related vehicular traffic as a means of ensuring a less than significant impact associated with implementation of the amended 2005 LRDP and are assumed as part of the proposed project:

PP 4.10-5(a) The Campus shall continue to provide on-campus housing to continue the evolution of UCR from a commuter to a residential campus.

PP 4.10-5(b) The Campus shall continue to implement an Alternative Transportation program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling.

Implementation of PP 4.10-5(a) and PP 4.10-5(b) would ensure that motor vehicle trips to and from the campus and the associated noise levels are reduced to the maximum extent feasible, as housing students on campus reduces the need to drive to classes and other campus services, thereby reducing vehicular noise. The Alternative Transportation program reduces the number of motor vehicle trips for campus employees. Based on the results of traffic noise modeling, and with implementation of the relevant Planning Strategies and Programs and Practices, development under the 2005 LRDP as amended would

not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.10-6 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, could add new stationary-source noise. However, it would not cause a substantial permanent on- or off-campus increase in ambient noise levels on- or off-campus. The impact would be less than significant.**

As discussed under **Impact 4.10-1** above, buildings associated with the proposed SOM would include stationary sources of noise such as mechanical heating, ventilation, and air conditioning equipment. The relocated parking structures and development that would ultimately occur with the designation of *housing* and *open space* on the Campus Reserve site would also represent new noise sources; however, the reconfiguration of West Campus open space would not involve any new noise sources. The remaining elements of the proposed 2005 LRDP Amendment 2 are programmatic in nature and would not generate increased noise levels from stationary sources.

Off-campus uses would be located several hundred feet from any potential site of new stationary equipment and would be separated from the campus by landscaped buffers and roadways. As discussed under **Impact 4.10-1**, stationary equipment on campus could generate noise levels that average 69 to 73 CNEL at 50 feet when the equipment is operating. With shielding noise levels generated by stationary equipment would be reduced by 15 dB(A) thus resulting in an average of 54 to 58 CNEL at 50 feet. Sound generated by a point source typically attenuates at a rate of 6.0 dB(A) for each doubling of distance from the source to the receptor. Thus, at 100 feet, new stationary equipment would average 48 to 52 CNEL while at 200 feet new stationary equipment would average 42 to 46 CNEL. Existing modeled roadway noise along the edge of campus ranges from 63.8 to 66.5 dB(A) CNEL. Therefore, noise from stationary sources that could result from implementation of the 2005 LRDP as amended would be substantially lower than existing modeled noise levels at the nearest off-campus receptors and a substantial increase of 5 dB(A) or more at the nearest off-campus receptors would not occur.

Furthermore, during the planning horizon of the 2005 LRDP as amended, future development of the campus would be guided by a range of LRDP Planning Strategies (PS) as necessary. The following LRDP Planning Strategies, which are relevant to the reduction of noise levels generated on campus and heard at off-campus locations, would be implemented as applicable if specific noise analysis for a project

implementing the amended 2005 LRDP determined the need to implement landscaped buffers or setbacks and are assumed as part of the proposed project:

PS Open Space 4 Provide landscaped buffers and setbacks along campus edges, such as Valencia Hill Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, and the I-215/SR-60 freeway.

PS Campus and Community 1 Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.

The Campus will also continue to implement as applicable the following existing campus Program and Practice (PP) that would reduce potential impacts associated with new stationary noise sources and is assumed as part of the proposed project:

PP 4.10-6 The Campus shall continue to shield all new stationary sources of noise that would be located in close proximity to noise-sensitive buildings and uses.

Given the distance between on-campus stationary noise sources and the nearest off-campus receptors, the project would not result in a substantial permanent increase in ambient noise levels at off-campus locations. Further, implementation of relevant Planning Strategies and a Program and Practice as appropriate would further ensure a less than significant impact.

Mitigation Measures: No mitigation is required.

Impact 4.10-7 **Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in substantial temporary or periodic increases in ambient noise levels at locations on campus. The impact would be significant.**

Although the specific locations of the SOM facilities, the two parking garages, and the West Campus open space were not previously considered under the 2005 LRDP, these sites were considered for development in the 2005 LRDP EIR evaluation. Therefore, development at these sites would not result in an increase in ambient noise levels that were previously not considered. The proposed relocation of *housing* and *open space* land uses to the Campus Reserve site was not previously considered under the 2005 LRDP and construction activities at this site could result in an increase in ambient noise levels that were previously not considered. The remaining elements of the proposed 2005 LRDP Amendment 2 are programmatic in nature and would not increase noise levels.

Under the proposed changes to the 2005 LRDP, noise would be generated during the construction of the new campus buildings and parking lots/structures. Based on historic trends at the campus, there could be

an average of between two to four building projects under construction at one time. Each of these buildings would be in a different location and would affect different receptors. Because these activities would not occur at a single location or affect the same receptors over the planning horizon of the amended 2005 LRDP, these construction-related noise impacts are considered temporary.

Four basic types of activities would be expected to generate noise during construction on-campus: demolition and site clearance, grading and excavation, building construction, and landscaping. During each stage of construction, there would be a different mix of equipment operating and noise levels would vary based on the amount of equipment in operation and the location of the activity. The potential noise levels associated with typical construction equipment and outdoor construction activities were previously identified in **Figure 4.10-3**. Classroom, office, and residential buildings are located in close proximity to areas where development under the 2005 LRDP as amended would occur. Construction noise levels could temporarily reach above 95 dB(A), as identified in **Figure 4.10-3** during the daytime at nearby on-campus buildings. This could be an increase of more than 10 dB(A) Leq over the existing daytime noise levels at these buildings. Therefore, construction noise levels could substantially increase existing noise levels at future residential and recreational uses on the campus. This would be a significant impact.

During the planning horizon of the 2005 LRDP as amended, the Campus would continue to implement as applicable the following existing campus Programs and Practices (PP) that would minimize construction noise impacts to on-campus locations and are assumed as part of the proposed project:

PP 4.10-7(a) To the extent feasible, construction activities shall be limited to 7:00 AM to 9:00 PM Monday through Friday, 8:00 AM to 6:00 PM on Saturday, and no construction on Sunday and national holidays, as appropriate, in order to minimize disruption to area residences surrounding the campus and to on-campus uses that are sensitive to noise.

PP 4.10-7(b) The Campus shall continue to require by contract specifications that construction equipment be required to be muffled or otherwise shielded. Contracts shall specify that engine-driven equipment be fitted with appropriate noise mufflers.

PP 4.10-7(c) The Campus shall continue to require that stationary construction equipment material and vehicle staging be placed to direct noise away from sensitive receptors.

PP 4.10-7(d) The Campus shall continue to conduct regular meetings, as needed, with on-campus constituents to provide advance notice of construction activities in order to coordinate these activities with the academic calendar, scheduled events, and other situations, as needed.

Although continued implementation of existing campus Programs and Practices would reduce construction-related noise, it would not ensure that construction noise levels do not increase by less than 10 dB(A) at noise sensitive uses located in close proximity to the construction sites. Therefore, development occurring under the 2005 LRDP as amended could result in a substantial periodic increase in ambient noise levels in the project vicinity above existing levels. This impact would be significant.

Mitigation Measures: No other mitigation is feasible.

Significance after Mitigation: The impact would be significant and unavoidable.

Impact 4.10-8 **Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in substantial temporary or periodic increases in ambient noise levels at off-campus locations. The impact would be significant.**

As discussed under **Impact 4.10-7** above, noise would be generated during the construction of the new campus buildings and parking lots/structures that would occur under the 2005 LRDP as amended. Depending on the location of individual campus development projects, some of this construction could occur close to off-campus sensitive receptors, such as nearby residential areas.

Off-campus residential uses that are located at least 100 feet from potential construction sites within campus are separated from the campus by sufficient distance and with intervening roadways such that the construction noise levels identified in **Figure 4.10-3** would be reduced by at least 6 dB(A). Therefore, in these situations, construction noise levels would be less than 89 dB(A) Leq at the nearest residential uses. However, on-campus construction activities would increase ambient noise levels by 10 dB(A) Leq or more over a 1-hour period at the nearest off-campus receptors that are less than 100 feet away from the construction site and in these instances, construction noise would result in substantial temporary periodic increases in ambient noise levels at off-campus residential locations.

During the planning horizon of the amended 2005 LRDP, the Campus will continue to implement as applicable the following existing campus Program and Practice (PP) that would reduce potential impacts associated with construction noise and is assumed as part of the proposed project:

PP 4.10-8 The Campus shall continue to conduct meetings, as needed, with off-campus constituents that are affected by campus construction to provide advance notice of construction activities and ensure that the mutual needs of the particular construction project and of those impacted by construction noise are met, to the extent feasible.

In addition to PP 4.10-8 described for this impact, PP 4.10-7(a) through (d) described above under **Impact 4.10-7**, would also minimize construction noise impacts to off-campus locations. They would not, however, ensure that noise levels do not increase by less than 10 dB(A) Leq at noise-sensitive uses located in close proximity to construction sites. The amended 2005 LRDP would therefore result in a substantial periodic increase in ambient noise levels from construction projects that are within 100 feet of the nearest residential receptors. This impact would be significant.

Mitigation Measures: No additional mitigation is feasible.

Significance after Mitigation: The impact would be significant and unavoidable.

Impact 4.10-9 **Implementation of the proposed 2005 LRDP Amendment 2 could result in temporary or periodic increases in ambient noise levels due to special events that are not substantial, although special events would occur as under existing conditions. The impact would be less than significant.**

Under the 2005 LRDP as amended, noise would continue to be generated by occasional special events at UCR, such as athletic meets at the campus track and outdoor concerts within the center and recreational areas of the campus. The loudest of these would continue to be the outdoor concerts. These special events would be similar to those that occur under the existing baseline conditions, and the actual noise levels generated by these events would be similar to existing conditions. Noise generated by additional numbers of persons assembled at an event would typically not be the primary source of noise, in particular when compared to noise from amplified systems. In addition, special events held in the interior portions of the campus would be screened from adjacent locations by campus buildings. As such, these events would not result in substantial temporary or periodic increases in ambient noise levels. No specific plans related to future locations, type, and frequency of special events, have been identified. Thus, any further analysis of the issue with respect to specific locations and frequency of events would be speculative. This is a less than significant impact.

Mitigation Measures: No mitigation is required.

4.10.4.5 Cumulative Impacts and Mitigation Measures

To present the impacts from the development envisioned under the 2005 LRDP as amended, the analysis presented above evaluates buildout of the campus in 2020/21. **Impact 4.10-5** evaluates the traffic noise that would result from growth in regional traffic through 2020/21 combined with the growth in traffic due to campus development under the amended 2005 LRDP. The analysis in **Impact 4.10-5** thus presents the cumulative traffic noise impact, including the noise from traffic added by the proposed project. The cumulative traffic noise impact was determined to be less than significant.

With respect to cumulative construction noise and vibration impacts, those would occur if projects proposed by others were to be under construction at the same time as projects within the campus and if these concurrent projects would be in close proximity of the same sensitive receptor. The area around the campus is relatively built out and at this time there are no other projects proposed that would be under construction the same time as the projects on the campus.

Similarly, in order for the on-site stationary noise (cooling towers, generators, pumps, etc.) associated with new development envisioned under the amended 2005 LRDP to cumulate with noise from other stationary noise sources, the noise sources would need to be in close proximity of the same sensitive receptor. At this time, there are no other projects proposed that would be in the vicinity of the same sensitive receptors as the projects on the campus. The cumulative impact would be less than significant.

4.10.5 REFERENCES

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4.11 POPULATION AND HOUSING

4.11.1 INTRODUCTION

This section describes the existing population and housing characteristics of Riverside region and evaluates the potential for the amended 2005 LRDP to result in population and housing impacts. The proposed Amendment 2 to the 2005 LRDP involves changes to the campus land use plan to accommodate a School of Medicine (SOM). By allowing for the development of a SOM, the amendment has the potential to increase the total campus population. This section evaluates the effect of the growth in campus-related population under the amended 2005 LRDP on the regional population and housing resources.

Data used in preparation of this section were obtained from the U.S. Census Bureau (1990, 2000, and 2010), the 2008 American Community Survey, the California Employment Development Department, the Southern California Association of Governments (SCAG), and the California Department of Finance (DOF).

No public or agency comments related to population and housing were received in response to the Notice of Preparation for this EIR.

4.11.2 EXISTING CONDITIONS

4.11.2.1 Population

Regional Growth Trends

The City of Riverside is located within the County of Riverside, in a larger geographic area known as the Inland Empire that includes western Riverside and San Bernardino Counties. The Inland Empire area is roughly defined by the San Bernardino Mountains to the north and east, the San Diego County line to the south, and the Los Angeles County and Orange County lines to the west. According to the DOF, Riverside County has a current (2010) population of 2,139,535 persons. SCAG provides population projections for the SCAG area and projects that the County's population will be 2,809,003 persons in the year 2020. This would be an increase of approximately 669,468 persons or a 31 percent increase over the 2010 population.

Table 4.11-1, City of Riverside Population Growth (1990-2020), shows the growth in the population of the City of Riverside since 1990. During the 20 years from 1990 to 2010 the City of Riverside experienced a population increase of approximately 33 percent. As also shown in **Table 4.11-1**, SCAG forecasts that

although the population will continue to grow in the City between 2010 and 2020, the rate of growth will be lower compared to the rate experienced during the 1990s and 2000s.

Table 4.11-1
City of Riverside Population Growth (1990-2020)

Year	Population	Decade Increase (Percent)	Average Annual Growth (Persons per year)	Average Annual Growth Rate (percent)
1990	226,505	--	---	---
2000	255,166	12.7	2,866	1.3
2010 [a]	300,523	17.8	1,155	0.4
2020 [a]	335,468	11.6	2,254	0.7

Source: U.S. Census Bureau 1990 and 2000. SCAG 2008.
a Estimated by SCAG in 2008 Regional Transportation Plan

Households

The U.S. Census Bureau defines a household as all people who occupy a housing unit. The Census Bureau and planning agencies distinguish between households and population because not all of the population lives in households; some live in group quarters, such as board and care facilities or student housing, and a small proportion are homeless. The DOF and the Census Bureau do not include student-occupied housing units in the total number of households; although students are counted in the population, they are not counted as distinct households.

The average household size in the City of Riverside and Riverside County has grown since 2000. **Table 4.11-2, Households in City of Riverside and Riverside County (2000-2008)**, shows that in 2000, the City of Riverside had 79,396 households, with an average household size of 3.12 persons per housing unit (pph). By 2008, the number of households increased to 90,306, an increase of 13.7 percent, with an increased average household size of 3.3 pph. Average household size is slightly greater in the City of Riverside than in other areas of Riverside County, where the average household size is 3.2 pph. Both City and County have higher average household sizes than the State of California average, which is 2.94 pph (California Department of Finance 2010).

Table 4.11-2
Households in City of Riverside and Riverside County (2000-2008)

	Total Households[a]		Increase	Average Household Size	
	2000	2008	2000-2008	2000	2008
City of Riverside	79,396	90,306	10,910	3.12	3.3
County of Riverside	506,218	647,443	141,225	2.98	3.2

Source: U.S Census Bureau 2000, 2008 American Community Survey.
a Represents occupied housing units.

Age Distribution

Table 4.11-3, City of Riverside Age Distribution (2008), provides age distribution in the City of Riverside in 2008. As **Table 4.11-3** shows, approximately 31.1 percent of the City's population is school-age, and 7.9 percent of the population is over 65 years of age.

Table 4.11-3
City of Riverside Age Distribution (2008)

Age Group	Number	Percent of Population
Preschool (0 to 4)	26,142	8.6
Elementary School (5 to 9)	20,718	6.8
Middle School (10 to 14)	22,374	7.3
High School (15 to 19)	25,773	8.4
Young Adults (20 to 24)	30,967	10.1
Prime Working (25 to 54)	135,897	44.5
Retirement (55 to 64)	19,293	6.3
Seniors (65+)	24,264	7.9
Total	**305,428**	**99.9** [a]

Source: 2008 American Community Survey
a Total does not equal 100 percent due to rounding.

UCR Population

Student Population

Student enrollment at UCR is calculated using an average of the three main academic quarters because student enrollment fluctuates during the year. While the Campus operates 365 days a year, the academic

calendar consists of the regular sessions (fall, winter, and spring quarters, which are used to calculate the three-quarter average) and summer session (12 weeks). Enrolled students may be undergraduate (individuals seeking a bachelors or equivalent degree) or graduate and professional (individuals seeking a masters or doctoral level degree or a professional degree such as in law, management, or medicine). The existing total student headcount enrollment for the regular session using a three-quarter average (for the 2010/11 academic year) is 20,746 students (UCR 2005).

Total On-Campus Population

The *on-campus population*, or the number of individuals either enrolled or employed on campus, consists of students, academic employees, and staff employees. Students are the largest group, followed by non-academic staff and academic employees. Other individuals comprise the remaining component of the average weekday population. This category includes conference and event participants; volunteers; gallery, museum, library, and recreation facility visitors; vendors; and construction workers (UCR 2005).

The existing on-campus average weekday population is shown in **Table 4.11-4, Existing Campus Population**.

Table 4.11-4
Existing Campus Population

Type	2009/10 Baseline
Students [a]	20,746
Faculty and Academic Staff [b]	927
Nonacademic Staff [a]	4,457
Other Individuals [d]	1,836
Total	**27,966**

Source: UCR Capital and Planning, March 2011

a Three-quarter average headcount, including students studying abroad.

b Includes faculty and other teaching and academic staff; excludes student employees (included in the enrolled student category)

c Includes Post-Doctoral Scholars.

d Average weekday number of other individuals, including campus visitors, childcare students, student family members (living on campus), daytime extension students, ASUCR (student government), KUCR Radio, and Highlander nonstudent staff, vendors, and construction workers. Does not include evening or weekend extension students or evening or weekend visitors.

Residential Distribution of Campus Population

Table 4.11-5, 2010/11 UCR Population Distribution, shows the residential distribution of student and faculty/staff, based on enrollment and parking information. Approximately 26 percent of the students live on campus, and about 36 percent live off-campus in the City of Riverside. With respect to faculty and staff, about 50 percent live in the City and the rest in other communities in the County and in other neighboring counties.

Table 4.11-5
2010/11 UCR Population Distribution

	Students [a]		Faculty and Staff	
	Percent	Number	Percent	Number
UCR Campus	25.9 %	5,371	0.0%	0
City of Riverside (exclusive of campus)	36.1 %	7,492	50.0%	2,692
County of Riverside (exclusive of City)	18.0%	3,734	11.0%	592
Outside of Riverside County	20.0%	4,149	39.0%	2,100
Total	**100.0%**	**20,746**	**100.0%**	**5,384**

Source: UCR Capital and Planning, March 2011
a Three-quarter average headcount, including students studying abroad.

Campus-Affiliated Population

The campus-affiliated population includes members of the households of UCR students, faculty, and staff in addition to enrolled students and faculty and staff that are employed at UCR. There are no data for the number of students, faculty, and staff that have a spouse, significant other, or dependents, and therefore the existing average household size in the City is used to estimate the campus-affiliated population. As discussed above, the average household size varies in the region. In order to provide a conservative analysis, the higher average household size in the City (3.3 persons per household) is used in all geographic areas. Based on the residential location of students, faculty and staff, an estimate of the campus-related population can be developed. However, data on the proportion of students that are married or in a domestic partnership is available only for those that reside within the Family Student Housing complex on campus. Therefore it is not possible to estimate the affiliates of the students who live off campus but that number is not expected to be large. **Table 4.11-6, 2010/11 Campus-Affiliated Population**, provides an estimate of the current total campus-affiliated population.

Table 4.11-6
2010/11 Campus-Affiliated Population

Area	Students	Student Household Members	Faculty and Staff	Faculty and Staff Household Members [b]	Totals
UCR Campus	5,371	614[a]	0	0	5,985
City of Riverside (exclusive of campus)	7,492	N/A	2,692	6,192	16,376
County of Riverside (exclusive of City)	3,734	N/A	592	1,362	5,688
Outside of Riverside County	4,149	N/A	2,100	4,830	11,079
Totals	**20,746**	**614**	**5,384**	**12,384**	**39,128**

Source: UCR Capital and Planning, March 2011
Does not include campus visitors and other individuals, or an estimate of off-campus student families
a Based on the number of Family Student Housing Units (267 units)
b Based on average household size of 3.3 persons

4.11.2.2 Housing

City of Riverside Housing

Total Housing Stock

The housing stock in the City of Riverside increased from 85,974 total housing units in 2000 to 99,720 housing units in 2008, as shown in **Table 4.11-7, Housing Stock in the City of Riverside**.

Table 4.11-7
Housing Stock in the City of Riverside

Year	Number of Units	Percent Increase
2000	85,974	--
2008	99,720	16.0

Source: U.S Census Bureau 2000, 2008 American Community Survey.

As shown by 2008 American Community Survey data, 57 percent of the occupied housing stock in the City of Riverside was owner occupied, while 43 percent of the occupied housing stock was renter-occupied. The breakdown of housing by type of structure is about 68 percent single family; 6 percent multi-family (2 to 4 units); 24 percent multi-family (5+ units); and 2 percent mobile homes/other.

Based on SCAG 2007 estimates, the total number of housing units in the City of Riverside is projected to increase to 109,137 units by 2020. This represents an increase of 9.4 percent over the 2008 total of 99,720 units.

Vacancy Rates

As stated in the UCR 2005 LRDP EIR, vacancy rates and the affordability of housing are key elements in the balance between supply and demand in the City's housing market. High vacancy rates usually indicate low demand and/or high prices in the housing market. Conversely, low vacancy rates usually indicate high demand and/or low prices in the housing market. However, vacancy rates are not the sole indicator of market conditions; they must be viewed in the context of all the characteristics of the local and regional market and economy (UCR 2005).

Vacancy rates that indicate a roughly balanced supply and demand of housing units generally range from 1 to 3 percent for single-family units and from 3 to 5 percent for multifamily units. Fluctuations in the regional and national economies in recent years affected the housing market, and growth in the local area resulted in declining vacancy rates for apartments through 2008. In 2008, the City's vacancy rate was 2.1 percent for owner-occupied units and 8.3 percent for renter-occupied units, indicating market balance conditions. **Table 4.11-8, City of Riverside Vacancy Rates (2000-2011)** provides the vacancy data for the City. According to the California Department of Finance on January 1, 2011, the City of Riverside had a vacancy rate of 6.6 percent with 6,515 vacant units. The US Census data for 2010 is comparable which shows a vacancy rate of 6.6 percent with 6,512 vacant units. The total vacancy rates include vacant units that are not available for rent or sale, such as those that have been rented or sold, but have not yet been occupied as of the date of the census, and units being held for repairs/modernization or for personal reasons (see **Table 4.11-9, Vacant Housing in the City of Riverside 2011,** below). These units make the apparent vacancy rate higher than the real rate because they are not on the market and are not available for rental or purchase. If such units are excluded, the current vacancy rate is about 4,880 units or about 5 percent.

Table 4.11-8
City of Riverside Vacancy Rates (2000-2011)

Year	Vacant Units	Vacancy Rate (percent)
2000	3,969	4.11
2008	9,414	9.4
2010	6,512	6.6
2011	6,515	6.6

Source: U.S Census 2000, 2008 American Community Survey; US Census 2010; DOF 2011

Table 4.11-9
Vacant Housing in the City of Riverside

Vacant housing units	Number	Percent
Total	6,512	100.0
For rent	3,275	50.3
Rented, not occupied	129	2.0
For sale only	1,281	19.7
Sold, not occupied	242	3.7
For seasonal, recreational, or occasional use	322	4.9
For migratory workers	1	0.0
Other vacant	1,262	19.4

Source: US Census 2010

UCR Housing

Existing On-Campus Housing Supply

Table 4.11-10, UCR-Owned Housing and Private Housing on UCR Land, 2010/11 shows existing on-campus housing by name, type of facility, and the number of students housed.

Table 4.11-10
UCR-Owned Housing and Private Housing on UCR Land, 2010/11

Name of Facility	Type of Facility	Number of Students Housed
Aberdeen-Inverness	Multi-Story Residence Hall	792
Bannockburn Village	Apartments: Studio and 1-2 Bedroom Suites	370
Canyon Crest	Family Student Apartments	267
International Village[a]	Apartments	65
Lothian	Multi-Story Residence Hall	1,036
Pentland Hills	Multi-Story Residence Hall	1,132
Stonehaven[a]	Apartments	400
University Plaza	Apartments	145
Glen Mor 1	Apartments – 2007	504
Falkirk (Highlander Ridge)	Apartments – 2008	416
Oban (Summer Ridge)	Apartments – 2009	244
Total Students Housed		**5,371[b]**

Source: UCR Institutional Planning and Analysis, 2009

a The International Village and Stonehaven apartments were privately developed on UCR property, and are intended to only house UCR or UCR Extension Students. International Village provides 65 general student enrollment beds and the balance for extension students

b. The Campus has started construction of Glen Mor 2 student housing project that was approved by The Regents in May 2011. Glen Mor 2 will add 810 beds to the campus student housing supply. Project occupancy is planned for Fall 2013.

Existing UCR Housing Demand

As shown in Table 4.11-5, approximately 5,371 students are housed on campus and 15,375 reside off-campus, along with 5,384 academic and other staff (all of whom reside off-campus). About 36 percent of the students live off-campus in the City of Riverside and about 50 percent of the faculty and staff live in the City.

4.11.2.3 Employment

The total labor force in the County of Riverside was estimated at 912,900 persons in November 2010. Of this number, 779,700 were employed and 133,200 were unemployed, for a 14.6 percent unemployment rate. From November 2000 to November 2010, Riverside County's labor force increased by 33.0 percent, compared to 7.7 percent for the State. Significant labor force gains also occurred in neighboring San Bernardino County, with a 15.6 percent change over this period. Within the City of Riverside, the labor force totaled 160,600 persons in November 2010.

The trade, transportation, and utilities sector is the largest employer in Riverside County, accounting for 24.0 percent of total employment, with retail trade being the largest component. Other significant industry sectors providing employment are government (19.8 percent), education and health services (11.9 percent), professional and business services (11.5 percent), and leisure and hospitality (10.7 percent) (EDD 2010).

UCR is included in the California Employment Development Department's list of the major employers in Riverside County, as shown in **Table 4.11-11, Major Employers—County of Riverside (2010)**. The discussion of employment is presented to provide context for changes to employment numbers at UCR that could affect population in the area.

Table 4.11-11
Major Employers—County of Riverside (2010)

Employer Name	Location	Industry
Abbott Vascular	Temecula	Physicians & Surgeons
Agua Caliente Casino	Rancho Mirage	Casinos
Corrections Department	Norco	State Govt-Correctional Institutions
Crossroads Truck Dismantling	Mira Loma	Automobile Wrecking (Wholesale)
Eisenhower Medical Center	Rancho Mirage	Hospitals
Handsome Rewards	Perris	Internet & Catalog Shopping
Hemet Valley Medical Center	Hemet	Hospitals
Hotel At Fantasy Springs	Indio	Casinos
Hub International of CA Insurance	Riverside	Insurance
J W Marriott-Desert Springs Resort	Palm Desert	Hotels & Motels
Kaiser Permanente	Riverside	Hospitals
La Quinta Resort & Club	La Quinta	Resorts
Morongo Hotel	Cabazon	Casinos
Morongo Tribal Gaming	Banning	Business Management Consultants
Pechanga Casino	Temecula	Casinos
Restoration Technologies Inc.	Corona	Electronic Equipment & Supplies-Retail
Riverside Community Hospital	Riverside	Hospitals
Riverside County Regional Medical Center	Moreno Valley	Hospitals
Riverside Forklift Training	Riverside	Trucks-Industrial (Wholesale)
Starcrest Of California	Perris	Internet & Catalog Shopping
Starcrest Products-California	Perris	Gift Shops
Sun World Intl LLC	Coachella	Fruits & Vegetables-Growers & Shippers
Universal Protection Service	Palm Desert	Security Guard & Patrol Service
University Of California Riverside	Riverside	Schools-Universities & Colleges Academic
Watson Pharmaceuticals Inc.	Corona	Drug Millers (Manufacturers)

Source: California Employment Development Department, Labor Market Information, 2010

4.11.2.4 Population, Housing, and Employment Projections

The Southern California Council of Governments (SCAG) is the regional planning agency for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG forecasts for population, household, and employment are provided in **Table 4.11-12, SCAG Population, Housing, and Employment Estimates**, for the City of Riverside and Riverside County.

Table 4.11-12
SCAG Population, Housing, and Employment Estimates

	2010	2015	2020	2025
City of Riverside				
Population	300,523	312,924	335,468	353,162
Households	96,135	102,625	109,137	115,732
Employment	175,094	195,554	217,537	239,595
Riverside County				
Population	2,242,745	2,509,330	2,809,003	3,089,999
Households	720,531	811,486	913,207	1,008,909
Employment	784,998	911,381	1,042,145	1,168,769

Source: SCAG 2008

The City of Riverside General Plan also provides projections of growth in City population and housing between 2005 and 2025. The General Plan provides three sets of projections: the first based on "typical" densities for new residential development, and two estimates based on higher growth/higher density scenarios. Under the typical density scenario, the General Plan assumes that future areas of development will develop at average residential densities and most existing built-out areas will generally remain as they are currently, whereas under the maximum with PRD density scenario (the higher of the two high density scenarios), the General Plan assumes that new areas will be developed with higher densities, provided the development is proposed as a planned residential development. **Table 4.11-13, City of Riverside Population and Housing Projections** presents the population and housing estimates for the City under both growth scenarios. The General Plan reports only 2025 estimates. The 2020 numbers reported in the table were estimated by interpolation. The General Plan EIR notes that the typical density scenario is a likely scenario under which Riverside is likely to grow in the future.

Table 4.11-13
City of Riverside Population and Housing Projections

	2020[a,b]	2025
Typical Density Scenario		
Population	331,419	346,867
Housing	110,945	115,622
Maximum with PRD Density Scenario		
Population	482,460	528,429
Housing	153,666	176,143

Source: City of Riverside 2007

a Population projection in 2020 based on an interpolation between the City's 2020 population of 300,523 and the 2025 projection.

b. Housing projection in 2020 based on an interpolation between the City's 2008 housing inventory of 99,720 units and the 2025 projection.

4.11.3 REGULATORY FRAMEWORK

4.11.3.1 Federal and State

There are no federal or State regulations related to population and housing that are applicable to the UCR campus.

4.11.3.2 Local

City of Riverside General Plan Housing Element

According to the Riverside General Plan Housing Element (as updated in 2010) and pursuant to State law, the City of Riverside supports the provision of sites for special-needs housing, such as for college students. Therefore, one objective identified in the City's General Plan is a provision to provide adequate housing and supportive services for Riverside residents with special needs, such as students, faculty, and employees of educational institutions. The Riverside Zoning Code permits dormitories as well as other standard housing opportunities in multifamily residential zones. In addition, these provisions further Riverside's commitment to fair and equal housing opportunities.

University Neighborhood Plan

In addition to the General Plan, the City of Riverside has prepared a University Neighborhood Plan for the University Neighborhood, which is bounded by Chicago Avenue to the west, Spruce Street and the City boundary to the north, Le Conte Drive and University Drive to the south, and the City boundary to

the east. The plan includes objectives and policies that relate to providing affordable housing for residents and UCR students, faculty and staff, including the provision of high density mixed use along University Avenue.

4.11.4 IMPACTS AND MITIGATION MEASURES

4.11.4.1 Significance Criteria

The impacts related to population and housing from the implementation of the 2005 LRDP Amendment 2 would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Induce substantial population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through the extension of roads or other infrastructure).
- Displace substantial numbers of housing, necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of existing people, necessitating the construction of replacement housing elsewhere.

4.11.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of issues related to the following significance criteria was not required in the EIR:

- Displace substantial numbers of housing, necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of existing people, necessitating the construction of replacement housing elsewhere.

As discussed in the Initial Study, development of elements listed in the proposed 2005 LRDP Amendment 2 would not require existing housing units to be demolished or removed, and no housing or people would be displaced. Therefore, implementation of the proposed Amendment 2 to the 2005 LRDP would not displace substantial numbers of housing or people, necessitating the construction of replacement housing elsewhere. This issue is not discussed further in this section.

4.11.4.3 Methodology

As a conceptual land use plan, the 2005 LRDP as amended by the proposed Amendment 2 helps guide the siting of future physical development, but does not commit the Campus to any specific projects or the

location of those projects. Note that the 2005 LRDP is a framework for potential growth, and there is no guarantee that this growth will occur.

However, for purposes of analysis, it was assumed that full development under the amended 2005 LRDP would occur by 2020. To estimate the potential for implementation of the amended 2005 LRDP to cause population-related impacts, projected population levels under the amended 2005 LRDP were compared to both existing conditions as well as future (2020) without project conditions to determine whether substantial changes in population and housing demand would occur.

4.11.4.4 Project Impacts and Mitigation Measures

Impact 4.11-1 **Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant 2005 LRDP Planning Strategy, would directly induce substantial population growth in the area by facilitating additional employment on the campus. Because projected housing supply in the study area would be adequate to serve this additional population, this impact would be less than significant.**

The proposed 2005 LRDP Amendment 2 is primarily focused on the West Campus and is intended to provide for the development of the SOM in this area of the UCR campus, a land use that was not envisioned in the 2005 LRDP. Implementation of this amendment would place the SOM in the north-eastern portion of the West Campus, locate the future parking structures adjacent to the freeway, and facilitate the development of the Campus Reserve site at the corner of MLK and Chicago Avenue with student housing. By allowing for the development of the SOM, the proposed amendment has the potential to increase the total campus population in excess of the projected population growth analyzed in the 2005 LRDP EIR. **Table 4.11-14, School of Medicine Population** presents the SOM-related population. The proposed SOM would have 400 students. These students were included in the enrollment forecast in the 2005 LRDP, and implementation of the proposed 2005 LRDP Amendment 2 therefore would not increase student enrollment beyond that projected under the 2005 LRDP. While the total student population is not expected to exceed 25,000 students under the amended 2005 LRDP, the pace of growth in enrollment previously projected to occur by 2015/2016 under the 2005 LRDP is now projected to occur by 2020/2021.

Table 4.11-14
School of Medicine Population

Type of Population	Number
Students [a]	400

Type of Population	Number
Doctors	150
Principal Investigators	150
Medical Education/Research/Administration [b]	838
Medical Offices [c]	2,794
Ambulatory Care [c]	719
Patients and Visitors [d]	1,202
Total	**6,253**

Source: UCR 2005 LRDP, derived from CO Architects "Order of Magnitude Construction Costs" memorandum to UCR Capital and Physical Planning, October 2007; UCR West Campus Infrastructure Development Study, April 2008 (WCIDS); UCR SOM Infrastructure Phase 1, March 2009; comparable Medical Research, Medical Office, and Ambulatory Care data UCSD Institutional Research and Health Sciences Planning, July 2009; UCR 2005 LRDP Amendment 2, August 2010.

a Students include 400 medical students, (graduate students included in Medical Education/Research; post-docs included in faculty, staff).

b Medical Education/Research includes teaching, administration, research labs, research support, and vivaria.

c Based on employees per square foot.

d Visitor and Patient population estimated to be 25% of student, faculty, and staff population, where applicable, since some facilities have neither patients nor visitors.

Table 4.11-14 also reports other populations associated with the SOM, including new UC employees, other non-UC employees, and visitors. The SOM designation would allow for the development of building space to house SOM-related medical offices and services. In addition there would be visitors and patients who would come to the campus once the SOM is developed. The employees in the medical office buildings would not be UC personnel. These 2,794 employees and visitors to the SOM are not included in the analysis of population and housing impacts because these persons would not move to the project region as a result of the proposed project. The analysis of population and housing impacts below evaluates the effects of the campus enrollment increasing to 25,000 students by 2020/21 and the effects of the additional employees at UCR as a result of general employee growth at the campus, plus the new UC employees associated with the SOM.

As shown in **Table 4.11-15, Current and Future Campus Daytime Population** below, implementation of the amended 2005 LRDP would accommodate an increase in student enrollment by 2020/21 of approximately 4,254 students compared to existing conditions. The faculty and staff employed on-campus would increase by approximately 7,183 over existing conditions. The total campus daytime population would increase by approximately 13,427 persons compared to existing conditions.

Table 4.11-15
Current and Future Campus Daytime Population

	2010/11 Baseline	2005 LRDP 2015/16 Projection	2020/21 Amendment 2 Projection	Net Increase from 2010/11 Baseline
Students [a]	20,746	25,000	25,000	4,254
Faculty and Academic Staff [b]	927	1,726	2,714	1,787
Nonacademic Staff [c]	4,457	6,190	9,853	5,396
Other Individuals [d]	1,836	2,624	3,826	1,990
Totals	**27,966**	**35,540**	**41,393**	**13,427**

Source: 2005 Long Range Development Plan Amendment 2

a Three-quarter average headcount, including students studying abroad.

b Includes faculty and other teaching and academic staff; excludes student employees (included in the enrolled student category).

c Includes Post-Doctoral Scholars

d Average weekday number of other individuals, including campus visitors, childcare students, daytime extension students, ASUCR, KUCR, and Highlander non-student staff, vendors and construction workers. Also includes approximately 616 current and 1,642 future student family members (residing in on-campus housing). Does not include evening or weekend extension students or evening or weekend visitors.

UCR currently houses approximately 26 percent of the total student population on campus; about 36 percent of students reside off-campus within the City of Riverside; and about 38 percent reside in other parts of Riverside County or outside the County. During the planning horizon of the proposed 2005 LRDP Amendment 2, future development would be guided as applicable by a LRDP Planning Strategy (PS), and is assumed as part of the proposed project. The following strategy is relevant to housing.

PS Land Use 4 Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing.

For purposes of the analysis below, it is assumed that consistent with Planning Strategy Land Use 4, by 2020/21, 50 percent of the new students would be housed on-campus, and the remaining 50 percent would reside off-campus. The new students that reside off-campus are expected to be distributed in a manner similar to the existing conditions with about 36 percent of students residing in the City of Riverside and the rest elsewhere in Riverside County and outside the County. Also for purposes of analysis, it was conservatively assumed that all students would be new to the region when they first enroll at the campus.

With respect to UCR employees, given the high unemployment rate in the County, it is assumed that at least 10 percent of the new employees (718 of the 7,183 new UCR employees) would already be living in the region and therefore would not add population to the study area communities nor result in a demand

for housing. With respect to the projected distribution of the 6,465 new UCR employees that would move into the study area, the analysis assumes that these new employees would reside in a pattern that is similar to the current distribution of UCR employees, with approximately 50 percent residing in the City of Riverside, 11 percent in the County, and the remaining 39 percent outside of Riverside County.

Table 4.11-16, 2020/21 Campus-Affiliated New Population by Location provides a projection of future campus-affiliated population and its distribution based on the assumptions noted above. In addition to persons to be enrolled or employed at UCR, this projection also includes campus-affiliated persons who would reside in the Riverside area as a result of implementation of the amended 2005 LRDP, including household members of new faculty and staff. The projection assumes that the size of the households would be equal to the City of Riverside average household size of 3.3 persons.

Table 4.11-16
2020/21 Campus-Affiliated New Population by Location

	Students	Student Household Members	Faculty & Staff	Faculty & Staff Household Members	Area Totals
UCR Campus	2,127	0	0	0	2,127
City of Riverside (exclusive of campus)	1,042	N/A	3,233	7,436	11,711
County of Riverside (exclusive of City)	511	N/A	711	1,635	2,857
Outside of Riverside County	574	N/A	2,521	5,798	8,893
Totals	**4,254**		**6,465[a]**	**14,869**	**25,588**

Source: Impact Sciences, 2010
Does not include campus visitors and other individuals, or an estimate of off-campus student families
Based on average household size of 3.3 persons
a This number reflects the new UC employees who would relocate to the project area and does not include those employees who would already be living in the project area at the time that they are first hired by the Campus.

The proposed project would result in an increase in the campus-affiliated population of approximately 11,711 persons in the City of Riverside; approximately 2,857 additional persons in Riverside County; and approximately 8,893 persons in areas outside Riverside County.

Table 4.11-17, Campus-Affiliated Population Growth Compared to Regional Population Projections, compares the increase in students, faculty, staff, and their associated family members to growth projections for the region.

Table 4.11-17
Campus-Affiliated Population Growth Compared to Regional Population Projections

	2010 Population	2020 Projection	Projected Net Increase	Campus-Affiliated Increase	Campus-Affiliated Population as Percent of Growth
City of Riverside (exclusive of campus)[b]	300,523	335,468	34,945	11,711	33.5
County of Riverside (exclusive of City)	2,242,745	2,809,003	566,258	2,857	0.5
Counties of Los Angeles, Orange and San Bernardino	16,112,727	17,446,529	1,333,802	8,893	0.7

Source: SCAG, 2008; Impact Sciences, 2010
Population growth outside the County of Riverside is assumed to occur within Los Angeles, Orange, and San Bernardino Counties.

As shown in **Table 4.11-17,** comparing growth resulting from implementation of the amended 2005 LRDP to regional projections, LRDP-related growth (exclusive of the students who would live on the campus) would comprise approximately 33 percent of projected growth in the City during the planning horizon. Campus-related growth in Riverside County and the adjacent three-county area would be minor in comparison to projected growth. The population growth itself would not have a significant impact on the physical environment. However, it would result in the demand for housing which is evaluated below.

As noted earlier, with implementation of LRDP Planning Strategy Land Use 4, 50 percent of the student enrollment would be housed in campus-controlled housing. Therefore assuming that 50 percent of the new students enrolled at the campus would live in on-campus housing, the remainder of the students would live in the project area communities and the new faculty and staff would also seek housing in the region. It is assumed that at a minimum there would be two students per off-campus residence and there would be 1.1 UC employees per residence.

Based on assumptions noted above, **Table 4.11-18, Increase in Campus-Affiliated Housing Demand by Location**, provides an estimate of how this increase in campus-affiliated population would increase housing demand and how that demand compares to projected growth in housing in the City of Riverside, the County of Riverside, and the three-county area of Los Angeles, Orange, and San Bernardino counties.

Table 4.11-18
Increase in Campus-Affiliated Housing Demand by Location

	Student Housing Demand, in Units	Employee Housing Demand, in Units	Total Housing Demand, in Units	Projected Increase in Units
City of Riverside (exclusive of campus)[b]	521	2,939	3,460	13,002
County of Riverside (exclusive of City)	256	646	902	179,674
Counties of Los Angeles, Orange and San Bernardino	287	2,291	2,578	507,899
Total	**1,064**	**5,876**	**6,940**	**700,575**

Source: Impact Sciences, 2010

Based on the numbers reported in **Table 4.11-18**, by 2020/21 campus development under the amended 2005 LRDP would result in a demand for approximately 6,940 additional units of off-campus housing, with demand for approximately 3,460 units occurring within the City of Riverside.

As shown in **Table 4.11-9**, at this time there are approximately 6,500 vacant dwelling units in the City. If housing not available for rent or sale is excluded, there are approximately 4,880 vacant dwelling units in the City. Therefore, if the LRDP-related demand for housing in the City of Riverside (3,460 units) is compared to the housing that is available under existing conditions, there is adequate vacant housing at this time to serve this demand.

However, the implementation of the amended 2005 LRDP would occur gradually over the planning horizon (to the year 2020/21), rather than as a single event in a given year. Therefore, the demand for housing would increase gradually during this period. If the LRDP-related demand for housing is compared to the projected growth in housing stock for the City of Riverside, the comparison shows that there would be more than adequate housing in Riverside to accommodate the project's demand. The LRDP-related demand for housing is well within the projected increase in housing that is envisioned for Riverside under the SCAG projections and the increase in housing projected in the City's General Plan under the typical density growth scenario and under the maximum growth with PRD scenario. SCAG's Regional Housing Needs Assessment (RHNA) identifies the anticipated future housing demand within each jurisdiction in the SCAG six-county region through 2014, as well as the proportionate share of new housing units needed in each jurisdiction to satisfy this demand. Under State law, each jurisdiction is

required to plan for its share of new housing identified in the RHNA as part of the Housing Element of that jurisdiction's General Plan. The RHNA for the City of Riverside identifies a need for 11,381 additional units in the 2006 to 2014 planning period. The 2010 Draft City Housing Element indicates that over 4,700 new housing units have been built in Riverside since 2006, and that an additional 7,000 planned/entitled units will be built by 2014, thus meeting the City's RHNA obligations.

Similarly, LRDP-related growth in housing demand in the County of Riverside is well within the projected Countywide growth of 179,674 units. Similarly, the projected increase in demand of approximately 2,578 units for the adjacent three-county area of Los Angeles, Orange, and San Bernardino Counties is a small proportion of the projected increase of 507,899 units.

As the regional housing stock can adequately meet the projected housing demand for UCR students, faculty, and staff, implementation of the amended 2005 LRDP would not create a demand for housing that could not be accommodated by local jurisdictions, and the proposed project's impact on population and housing would be less than significant.

Mitigation Measures: No mitigation is required.

4.11.4.5 Cumulative Impacts and Mitigation Measures

The geographic setting for the analysis of cumulative population and housing impacts is the County of Riverside, including the City of Riverside, other incorporated cities, and unincorporated areas. The cumulative growth in this geographic area includes all growth envisioned by SCAG.

Impact 4.11-2 **Cumulative development, including campus development under the amended 2005 LRDP, would directly induce substantial population growth in the City of Riverside. However, adequate housing would be available to serve the population. The cumulative impact would be less than significant.**

SCAG projects that there will be 335,468 persons in the City of Riverside by 2020, which would be substantial increases over existing population levels. According to its General Plan 2025 EIR, under its typical growth scenario, the City of Riverside has a projected population of 346,867 at buildout of the City in 2025, an increase of 46,344 over 2010 conditions. Assuming a steady growth rate over the next 10 years, the City's population in 2020 would be 331,419 persons, which is less than SCAG projections of 335,468 persons for the same year by 4,049 persons. If the increase in campus-affiliated population under the amended 2005 LRDP (approximately 11,711 persons that would live off campus in the City) were to be added to the City's projected population for 2020, the total population of the City (343,130 persons)

would exceed current SCAG projections for 2020 by 7,662 persons. This difference between the projected City population per SCAG and the City total, including the campus-related population, is about 2 percent of either projection and is within the margin of error of any long-term projection. Therefore, the additional population added to the City's total population by the proposed project would not represent a cumulatively considerable contribution to the increase in City population.

The City's General Plan designates an adequate amount of land for new housing to handle the projected increase in population. Under the typical growth scenario, the General Plan provides for 15,902 new dwelling units within the City, and under the maximum growth with PRD scenario, the General Plan notes that 76,423 units would be developed in the City. Because an adequate amount of housing is planned in the City to handle the projected growth, the proposed project in conjunction with other growth in the City, would not result in a demand for housing that could not be accommodated by the local jurisdiction. Therefore the cumulative impact would be less than significant.

Mitigation Measures: No mitigation is required.

4.11.5 REFERENCES

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4.12 PUBLIC SERVICES

4.12.1 INTRODUCTION

This section of the EIR describes the existing conditions related to fire and police services that serve the UCR campus and analyzes the potential for implementation of the proposed 2005 LRDP Amendment 2 to result in substantial adverse physical impacts associated with the provision of new or physically altered fire or police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire and police protection.

The information in this section is based on consultation with the City of Riverside Fire and Police Departments and the UC Police Department, Riverside (UCPDR). Bibliographic entries for reference materials appear in **subsection 4.12.5**, **References** of this section.

In response to the Notice of Preparation (NOP) for this EIR, members of the public requested that UCR consider the impacts of the growing on-campus residential population on police and fire services. The City of Riverside in its letter on the NOP noted that the Draft EIR needs to expand on the analysis of public services provided in the NOP, including an analysis of the impact of additional calls for service by the Campus on City fire and police services. All of these scoping comments were considered in the analysis presented below.

4.12.2 EXISTING CONDITIONS

4.12.2.1 Fire Protection

The City of Riverside Fire Department (RFD) in conjunction with UCR's Environmental Health and Safety Department (EH&S) provides fire service for the UCR campus, based on an unwritten agreement between these departments. The City of Riverside Fire Department is responsible for fire suppression, while EH&S is responsible for inspection, fire protection engineering, and fire prevention. The Campus also has a Memorandum of Understanding (MOU) with the State Fire Marshall to provide additional support, and there is a designated Deputy State Fire Marshall on the campus (UCR 2005).

City of Riverside Fire Department

The RFD provides fire protection service, mainly fire suppression, on the UCR campus. The RFD provides fire protection and emergency services to the City of Riverside from 14 stations strategically located throughout the City. Emergency responders can come from any of the 14 stations depending on

the closest and available unit. For a typical fire response, firefighters would respond to the campus from a number of different fire stations. The distance and expected response time to the campus from each of the fire stations that serve the campus is provided in **Table 4.12-1, Fire Stations Serving the UCR Campus**.

Table 4.12-1
Fire Stations Serving the UCR Campus

Station Number	Location	Distance From Site	Response Time
4	3510 Cranford Drive	1 mile	4 to 5 minutes
14	725 Central Avenue	2.6 miles	6 to 7 minutes
1	3420 Mission Inn Avenue	3.2 miles	6 to 7 minutes
6	1077 Orange Street	3.2 miles	6 to 7 minutes
3	6395 Riverside Drive	5.6	9 to 10 minutes

Source: Riverside Fire Department, March 2011.

The desirable response time for the first arriving RFD engine company is 5 minutes, 90 percent of the time. Multiple unit responses to incidents such as structure fires require the entire response arrival within 10 minutes of being dispatched. Statistics from 2008-10 indicate that the RFD met the desirable response time goal only 45 percent of the time for the first arriving unit (Esparza 2011).

Environmental Health and Safety

Campus EH&S is also responsible for fire protection engineering, fire inspection, and fire prevention. Among the services EH&S performs are: fire protection engineering, which consists of design consultation services; formal plan review and approval; and various acceptance testing and inspections. These are performed for new construction, renovations, and remodels of campus facilities. All new construction at UCR is reviewed by EH&S in terms of design and inspection and is required to comply with the California Fire Code. In addition, periodic fire safety inspections are conducted by fire prevention staff of all campus facilities, including required service, maintenance, and testing of fire and life safety equipment, fire hazard prevention, and resolution. Furthermore, fire prevention staff also participates in recurring campus safety training of portable fire extinguishers for employees of UCR, provide public assembly inspections for special events, investigate incidents involving fire safety issues, liaison with various non-campus emergency responders, and participate in the implementation of the campus Emergency Operations Plan (UCR 2005).

Although EH&S does not have access to engine or truck company equipment like the RFD, they are responsible for the inspection and design of emergency vehicle access. Emergency vehicle access throughout the campus is currently adequate and is inspected and reviewed by EH&S periodically.

Fire Flow Water Supply

Potable water for fire protection on the East Campus is provided by the City of Riverside through two connections. The primary source is the 5-million gallon (MG) reservoir located adjacent to University Avenue immediately east of I-215/SR-60. The secondary potable water source is a City water main located at the intersection of Linden and Florida Streets. This secondary connection is only used for emergency fire protection and as a fail-safe backup to the five MG reservoir connection. Additional storage capacity (for both domestic supply and fire protection is provided by two existing on-campus tanks (a 1 million gallon capacity tank and a 50,000-gallon capacity tank, both located on the East Campus in the southeastern hills approximately 200 feet above the campus mean elevation). Supply from these tanks is supplemented by the second connection on Linden Street and a booster pumping station drawing water from the City's 5 MG reservoir (UCR 2005).

The Agricultural Operations on the West Campus are connected to the East Campus water system, although development on the West Campus such as International Village is not connected to the East Campus water system. These areas are served by existing City lines running east/west in University Avenue, Everton Place, and Martin Luther King Boulevard (MLK) and north/south lines in Chicago Avenue, Iowa Avenue, and the Cranford Avenue street alignment (UCR 2005).

With the secondary connection to Linden Street and the booster pumping station, all of the existing water lines currently serving the campus provide no less than 1,500 gpm for a minimum duration of 2 hours, and is considered adequate to serve the fire suppression needs for the campus (UCR 2005).

County of Riverside Fire Department

The Riverside County Fire Department provides fire-fighting aid on a backup basis to the City of Riverside Fire Department for the UCR campus area. The County Fire Department is a participant in the master mutual aid agreement with the RFD and supplies available manpower and equipment when requested and as available.

4.12.2.2 Police Services

The UCPDR is responsible for providing police services to the UCR campus. The Department is authorized to appoint 29 sworn peace officers, 21 of which typically serve as patrol officers. Although two positions are currently unfilled in the Department, those positions may be filled. With 27 current sworn officers and an existing campus population of approximately 27,966 (students, faculty, staff and other individuals), the current service ratio is approximately one sworn officer per 1,000 persons. The Department also has 11 non-sworn personnel, consisting of six full-time Public Safety Dispatchers (PSDs), one Management Services Officer, one Programmer Analyst, two full-time Administrative Specialists, and one Communications Supervisor (Freese 2011).

The UCPDR relies on requests for service to determine the number of officers on patrol. Typically, UCR uses a minimum of three patrol cars and three officers to patrol the campus 24 hours per day, seven days per week (Freese 2011). Additional officers are scheduled during special events, or when deemed necessary.

The UCPDR, as required by State law, has a formal Memorandum of Understanding (MOU) with the City of Riverside, whereby the UC Police Riverside Department and the Riverside Police Department (RPD) provide reciprocal assistance to each other. The two departments jointly operate a community policing enterprise known as the University Neighborhood Enhancement Team (UNET) in a 17.5 square-mile area of the City of Riverside. In addition to UNET, the UCR campus beat officers handle about 2,800 incidents within the City over an average year, including the handling of City calls when RPD officers are unavailable and the provision of back-up services for RPD officers in need of assistance in areas near the campus. In turn, RPD reciprocates by providing the UCPDR with emergency back-ups, and infrequently, the handling of emergency calls when UC Police Department staff is unavailable (Freese 2011).

The UC police station is located on the East Campus at the southeast corner of Canyon Crest Drive and Linden Street. In addition, a storefront office for the UNET joint policing program is located in University Village, on University Avenue west of the freeway. Currently four officers and one sergeant from the UC Police Department are assigned to UNET to perform joint university-community policing with the City of Riverside (Freese 2011).

The emergency response time for the UC Police Department is usually under 5 minutes. The Department's non-emergency response time, under normal circumstances, is usually within 30 minutes (Freese 2011).

4.12.3 REGULATORY FRAMEWORK

4.12.3.1 Federal

There are no federal regulations for fire protection or law enforcement applicable to UCR.

4.12.3.2 State

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code, which include regulations concerning building standards (as also set forth in the California Building Code and in the California Code of Regulations Title 24, Part 9), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training. Fire flow rates are specified in the California Fire Code, Appendix III-AA, and are a function of building size, type, material, purpose, location, proximity to other structures, and the type of fire suppression systems installed. The standard requirements for fire flows vary from no less than 1,500 gallons per minute (gpm) for high-density residential uses to no less than 3,000 gpm for high-density industrial uses.[1] The State Fire Marshal enforces these regulations and building standards in all state-owned buildings, state-occupied buildings, and state institutions throughout California, including the University of California (UCR 2005).

Per State law, UCR has a MOU with the City of Riverside related to police protection services, whereby both the UC Police Department and the Riverside Police Department (RPD) provide assistance to each other (UCR 2005).

4.12.4 IMPACTS AND MITIGATION MEASURES

4.12.4.1 Significance Criteria

The impacts on public services from the implementation of the proposed project would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Result in substantial adverse physical impacts associated with the provision of 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 fire protection, police protection, schools, parks, or other facilities.

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1 The fire flow rates specified are reduced from their standard designations under the California Fire Code and represent fire flows after provision for the building sprinkler system.

4.12.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR.

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable performance objectives for schools.

As discussed in the Initial Study, implementation of the proposed 2005 LRDP Amendment 2 would increase the overall population on campus as the SOM employees were not considered in the 2005 LRDP. The families of these employees associated with the SOM would include school-age children. Although this population would result in new students in the City of Riverside and surrounding areas, funds would be available from private residential and commercial development to pay for new facilities. In addition, the Riverside Unified School District and neighboring school districts have a number of options available to accommodate new students. These options include opening a previously closed school, providing new or temporary classrooms, building a new school, modifying school district boundaries or enrollment areas (thereby freeing up capacity), and modifying which grade levels attend elementary, middle, and high schools. Therefore, implementation of the proposed Amendment 2 to the 2005 LRDP would not result in substantial adverse physical impacts associated with the provision of new or physically altered school facilities. This issue is not discussed further in this section.

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios for parks.

As discussed in the Initial Study, implementation of the proposed 2005 LRDP Amendment 2 would not increase the use of existing neighborhood and regional parks or other recreational facilities. Although the on-campus population would be greater as result of the implementation of the proposed Amendment 2 to the 2005 LRDP compared to overall population on campus considered in the 2005 LRDP EIR, future development associated with the proposed 2005 LRDP Amendment 2 would be guided by a range of LRDP planning strategies, including PS Open Space 7, which requires development to provide neighborhood parks and tot lots in the family housing areas as neighborhood open space. In addition, the proposed Amendment 2 to the 2005 LRDP includes a greatly improved *Open Space* concept for the West Campus. Therefore, implementation of the proposed Amendment 2 to the 2005 LRDP would not result in substantial adverse physical impacts associated with the provision of new or physically altered parks. This issue is not discussed further in this section.

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable performance objectives for other facilities.

As discussed in the Initial Study, the SOM would include library facilities on site as needed to serve the medical school programs. The other elements of the proposed 2005 LRDP Amendment 2 would not increase the need for additional library space. Even though the campus-affiliated population that would live in the City would increase slightly as a result of the proposed Amendment 2 for the 2005 LRDP, it would not increase sufficiently to affect the conclusion in the 2005 LRDP EIR with respect to the effect of campus-affiliated population in the City of Riverside on public libraries, which was less than significant. In addition, the Campus provides libraries that are open to the public and are used by its campus population thus reducing demand on City resources. Therefore, implementation of the proposed 2005 LRDP Amendment 2 would not result in substantial adverse physical impacts associated with the provision of new or physically altered library facilities, and this impact would be less than significant. This issue is not discussed further in this section.

4.12.4.3 Methodology

As a conceptual land use plan, the 2005 LRDP as amended by the proposed Amendment 2 would help guide the siting of future physical development, but adoption of the proposed Amendment 2 to the 2005 LRDP does not commit the Campus to any specific projects. To estimate the potential for implementation of the amended 2005 LRDP to affect levels of service for fire protection and police protection in a manner to require new or physically altered government facilities, future demands on fire and police services were estimated based on the potential increase in on-campus building space that would result from implementation of the amended 2005 LRDP, or an increase in a segment of the campus population that requires such services.

4.12.4.4 Project Impacts and Mitigation Measures

Impact 4.12-1 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would not result in significant environmental impacts associated with the provision of new or altered fire protection facilities to maintain applicable service levels. The impact would be less than significant.**

The development of land uses facilitated by the amended 2005 LRDP would add to the demand for fire services and increase the fire flow demands on the West Campus. In addition to the 5.3 million gsf of development remaining as of 2011 to be built under the 2005 LRDP, implementation of the proposed 2005

LRDP Amendment 2 would add 3.1 million gsf of new development associated with the proposed SOM. This development would ultimately result in the campus accommodating an enrollment of 25,000 students and an on-campus population of approximately 41,393 persons. The increase in on-campus building space, and the increase in the on-campus population, would increase the demand for fire prevention and suppression services and require additional domestic water service to assure adequate fire flow.

As is current practice, during the planning horizon of the amended 2005 LRDP, future development of the campus would be guided as applicable by a range of campus Programs and Practices (PP) and are assumed as part of the proposed project. The continued implementation of existing campus PPs 4.12-1(a) and (b) would also incorporate fire prevention features into new development:

PP 4.12-1(a) As development occurs, the following measures will be incorporated:

(i) New structures would be designed with adequate fire protection features in compliance with State law and the requirements of the State Fire Marshal. Building designs would be reviewed by appropriate Campus staff and government agencies.

(ii) Prior to implementation of individual projects, the adequacy of water supply and water pressure will be determined in order to ensure sufficient fire protection services.

(iii) Adequate access will be provided to within 50 feet of the main entrance of occupied buildings to accommodate emergency ambulance service.

(iv) Adequate access for fire apparatus will be provided within 50 feet of stand pipes and sprinkler outlets.

(v) Service roads, plazas, and pedestrian walks that may be used for fire or emergency vehicles will be constructed to withstand loads of up to 45,000 pounds.

(vi) As implementation of the LRDP occurs, campus fire prevention staffing needs would be assessed, increases in staffing would be determined through such needs assessments.

PP 4.12-1(b) (i) Accident prevention features shall be reviewed and incorporated into new structures to minimize the need for emergency response from the City of Riverside.

(ii) Increased staffing levels for local fire agencies shall be encouraged to meet needs generated by LRDP project related on-campus population increases.

As indicated in the existing conditions section, the UCR campus is served by several fire stations located in the vicinity of the UCR campus. The RFD standard for an urban level of fire service requires that an engine company arrive on the scene within 5 minutes, 90 percent of the time. Fire Station 4, which is the nearest fire station to the campus, meets this goal in response to incidents on the campus only 45 percent of the time. When multiple units are required, the RFD's response time goal is 10 minutes, which the remaining stations currently meet. The RFD has indicated that they will not be able to meet their response time standard from Station No. 4 with the addition of development planned under the amended 2005 LRDP (Esparza 2011). In order to meet national standards for fire and life safety services, the RFD indicated that it would be desirable to add a fire station near the campus (Esparza 2011). Based on the above, new, expanded, or altered fire protection facilities may be proposed and constructed by the RFD.

Development of a new fire station is expected to comply with zoning and general plan requirements that would be in effect at the time such improvements are considered. Although specific locations for new fire stations are not provided in the City's General Plan and the final location of a new fire station to serve the campus and its vicinity would be determined by the City, it is reasonable to assume that the fire station would be close to the campus to ensure adherence to the RFD's standard emergency response time. Given the availability of several underutilized land parcels owned by the City's redevelopment agency along University Avenue, should a new fire station be proposed it could potentially be along or near University Avenue or in some area near the East Campus. The construction of the new fire station is not expected to result in significant environmental impacts because, due to the nature of fire station projects (i.e., infill on sites less than 1 acre, surrounded by existing development), potential impacts are expected to be less than significant or if potentially significant, capable of being mitigated to a less than significant level with mitigation. Therefore, the environmental impact resulting from the potential for the RFD to construct new or expanded fire protection facilities would be less than significant. However, the University proposes to implement **Mitigation Measure 4.12-1** to further reduce its potential impact.

The increased amount of building space on campus, and the increased level of construction activity would increase the demand on EH&S' Fire Prevention Programs, including design consultation services, formal plan review and approval, testing and inspection of new construction and renovations, periodic fire safety inspections, and service, maintenance, and testing of fire and life safety equipment. The Campus will continue to comply with all regulations of California Health and Safety Code Sections 13000 et seq. pertaining to fire protection systems, including provision of state-mandated smoke alarms, fire extinguishers, appropriate building access, and emergency response notification systems. Continued implementation of existing campus PP 4.12-1(a) and PP 4.12-1(b) would assure implementation of measures to improve fire safety and reduce the need for fire protection services (UCR 2005).

The quantity of water required for fire protection (i.e., fire flows) varies and is dependent upon many factors that are specific to each particular building, such as the floor area, type of construction, expected occupancy, type of activities conducted within the building, and the distance to adjacent buildings. The Campus currently is in compliance with the fire flow rates specified in Appendix III-AA of the California Fire Code. Current water storage tanks that provide fire flow are adequate as supplemented by the second water connection on Linden Street and the booster pumping station drawing water from the City's 5 MG reservoir on University Avenue. The Campus Fire Marshal reviews all new construction, remodels and renovations and requires that any increases in fire flow demand is required to maintain adequate water pressure and volume for firefighting purposes through plan review and prior to occupancy of the new/renovated space. The 2005 LRDP proposed an additional 7 MG storage tank adjacent to the existing 1 MG and 50,000 gallon reservoir on the East Campus in the southeastern hills to augment fire flow supply and pressure. The additional tank has not been needed to date, but projects in the future will review the need for this requirement and the Campus will install the additional tank when the amount of development on campus requires it. This would eliminate the need to rely on City systems to ensure adequate water pressure in all areas on the campus. Other improvements to the current infrastructure would be required that may include, but not limited to, the establishment of a higher capacity for the current 5 MG City reservoir or additional linkages between the campus and City water distribution systems, including locations on the West Campus. Environmental impacts of these improvements are addressed on a programmatic basis as part of the overall development analyzed in the 2005 LRDP EIR. Continued implementation of existing campus PP 4.12-1(a) would assure improvements to fire flow capacity on an as-needed basis. Specifically, PP 4.12-1(a) includes requirements for new structures on campus to be designed with adequate fire protection features in compliance with state law and the requirements of the State Fire Marshal, and for the adequacy of water supply and water pressure to be determined prior to implementation of individual projects to ensure sufficient fire protection services for the campus. Thus, during the design phase of a project, fire flow will be assessed. If inadequate, fire flow upgrades will be provided as needed to ensure adequate fire flow prior to start of construction.

Continued implementation of existing campus Programs and Practices would reduce the need for fire protection services and ensure adequate fire flow is available. While the RFD has indicated that it would be desirable to add a fire station to meet national standards for fire and life safety services, the construction of the new fire station is not expected to result in significant environmental impacts. Therefore, this impact is considered less than significant. The following mitigation measure is proposed to further reduce the impact.

Mitigation Measure:

MM 4.12-1: Should the City propose the construction of a new fire station to serve the campus and its surrounding areas, and the analysis of the environmental effects of the fire station project indicate that there would be potentially significant impacts requiring mitigation, the University will pay its proportional share of the cost of the environmental mitigation required for the project.

Impact 4.12-2 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would not result in significant environmental impacts associated with the provision of new or altered police facilities. The impact would be less than significant.**

Implementation of the proposed 2005 LRDP Amendment 2 would increase the overall population on campus as employees who would occupy the medical office building space in the medical school and SOM visitors were not previously considered in the 2005 LRDP EIR. In addition to the 5.3 million gsf of development remaining to be built under the 2005 LRDP, implementation of the proposed 2005 LRDP Amendment 2 would add 3.1 million gsf of new development associated with the proposed SOM. This development would ultimately result in the campus accommodating an enrollment of 25,000 students and an on-campus population of approximately 41,393. The increase in on-campus building space, and the increase in the on-campus population, would increase the demand for police services that could potentially affect police response times.

However, as is current campus practice, during the planning horizon of the amended 2005 LRDP, the Campus would continue to implement as applicable the following existing campus Programs and Practices (PP) that would reduce potential impacts on police services and are assumed as part of the proposed project:

PP 4.12-2(a) As development under the LRDP occurs, the Campus will hire additional police officers and support staff as necessary to maintain an adequate level of service, staff, and equipment, and will expand the existing police facility when additional space is required.

PP 4.12-2(b) The Campus will continue to participate in the "UNET" program (for coordinated police response and staffing of a community service center), which provides law enforcement services in the vicinity of the campus, with equal participation of UCR and City police staffs.

As indicated in the setting, the current emergency response time by the UCPDR is well under 5 minutes while non-emergency response time is within 30 minutes. The incremental increase in the campus population may result in increased response times by the UCPDR. The increased daytime and resident population on campus would require additional routine services to provide additional patrols of the campus and maintain police presence. Additional administrative staff may be necessary to support the additional patrol personnel. In order to maintain adequate levels of police protection to serve the anticipated increase in campus population, the UCPDR may need to purchase additional equipment and hire additional personnel. To maintain the current ratio of one sworn officer per 1,000 persons, an increase in the campus population to approximately 41,393 persons resulting from implementation of the proposed 2005 LRDP Amendment 2 would require the provision of an additional 12 sworn officers (in addition to the currently authorized 29 sworn officers). However, estimated staffing to population ratios for 2010 at all University of California campuses ranged from 0.72 to 2.15 sworn officers per 1,000 persons (Freese 2011). Thus, adequate service could be provided to the campus with a lower ratio of officers to population with the addition of more CSOs and parking patrol officers and other measures. While increased patrols may be necessary due to the increased population on campus, the proposed Amendment 2 to the 2005 LRDP does not include any features that would make it inherently susceptible to criminal activity. Persons on the campus would not be exposed to increased risks as a result of the additional demands on the police department. Continued implementation of existing campus PP 4.12-2(a) would assure the hiring of additional officers as needed to maintain adequate service levels.

The increased staffing could require modification of the existing UCPDR station, or provision of additional space to accommodate the additional staff and equipment. This could include renovation of the existing UCPDR facility, expansion of the existing facility, or the acquisition of a satellite facility (similar to the storefront UNET facility at University Village). Physical alterations, including expansion are expected to only involve a minor amount of space (as the existing facility is 9,619 gsf[2]) or disturb a small area adjacent to the existing facility. The potential environmental effects associated with expanding the existing facility or providing a satellite facility were evaluated in the 2005 LRDP EIR at a program level in **Sections 4.1** through **4.15**. That analysis is relevant to any expansion of facilities required by the proposed Amendment 2 to the 2005 LRDP. Furthermore, at such time as a specific project is proposed, project level analysis would be done as necessary. As the analysis in the 2005 LRDP EIR shows, the construction of these facilities would not individually result in significant environmental impacts.

An increase in the on-campus population would increase activity along University Avenue, such as use of restaurants, and other retail services in the campus vicinity. This could result in an increase in calls for

2 The existing police facility consists of a main building (9,289 gsf) and a modular building (320 gsf) for a total of 9,619 gsf.

police services in the community surrounding UCR. Continued implementation of existing campus PP 4.12-2(b) would assure continued participation in the UNET program, which would result in the UCPDR sharing responsibility for response to near-campus service calls and incidents. In turn, RPD would continue to provide emergency back-up to UCPDR. In addition, all development associated with the proposed Amendment 2 to the 2005 LRDP would occur on the campus. Because there would not be an increase in the off-campus development, implementation of the proposed 2005 LRDP Amendment 2 would not directly increase the need for patrols in off-campus residential areas. An increase of approximately 11,711 campus-affiliated persons within the City would increase the population served by the Riverside Police Department. However, this increase would be nominal in comparison to the City population of over 300,000 persons and as noted under **Impact 4.11-3** (**Section 4.11, Population and Housing**), this increase would substantially be within the population growth projections for the City under the current General Plan and the SCAG projections for the City of Riverside.

With continued implementation of the identified existing campus Programs and Practices, implementation of the 2005 LRDP would not result in significant environmental impacts associated with the provision of new or altered police protection facilities to maintain applicable service levels, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

4.12.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative public services impacts is the City of Riverside, including all cumulative growth therein, as represented by full implementation of the City of Riverside General Plan.

Impact 4.12-3 **Cumulative development, including the proposed 2005 LRDP Amendment 2, would not result in significant environmental impacts associated with the provision of new or altered fire and police facilities. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.**

As additional development occurs in the City of Riverside, there may be an overall increase in the demand for law enforcement and fire protection services, including personnel, equipment, and facilities. Any necessary facilities expansion would be addressed by project-specific CEQA review that would ensure impacts would be minimized to the extent feasible. Population increases in the project area would cause an incremental increase in demand on local law enforcement and fire suppression agencies. Increases in demand are routinely assessed by these agencies as part of an annual monitoring and

budgeting process to ensure that adequate services are provided. As noted above, a fire station may be needed to serve the campus and surrounding area given that the existing fire station is not able to meet the RFD's response standard 55 percent of the time. For reasons presented earlier, the construction and operation of a new fire station to serve the cumulative growth is not expected to result in significant environmental impacts. However, should any significant impacts be identified by the City, pursuant to **Mitigation Measure 4.12-1**, the University will pay its proportional share of the cost of the environmental mitigation.

In the case of police enforcement, the campus is served by UCPDR. As required by State law, UCPDR also has an MOU with the RPD, allowing the two departments to provide assistance to each other. Implementation of the amended 2005 LRDP would be accommodated within the existing police and fire service capabilities, and Programs and Practices would continue to be implemented to ensure fire and police demands are met. Thus, the proposed project's contribution to cumulative impacts would not be cumulatively considerable.

Mitigation Measures: No mitigation is required.

4.12.5 REFERENCES

Esparza, Michael. 2011. Personal communication via electronic mail between Michael Esparza, Fire Marshall/Division Chief, RFD and Nita Bullock, Director of Physical Planning/Campus Landscape Architect, UCR. March 11.

Freese, John. 2011. Personal communication via electronic mail between John Freese, Lieutenant, UCPDR and Mike Lane, Chief, UCPDR. January 19.

University of California, Riverside (UCR). 2005. Long Range Development Plan Final Environmental Impact Report. SCH No. 2005041164.

4.13 RECREATION

This environmental factor was adequately addressed in the 2005 LRDP EIR (UCR 2005). The Initial Study prepared for the proposed 2005 LRDP Amendment 2 (**Appendix 1.0**) found that the proposed Amendment 2 would not have any potentially significant impacts on recreation. Implementation of the proposed 2005 LRDP Amendment 2 would not change the significance of any impacts identified in the 2005 LRDP EIR for this environmental factor. No further evaluation of this environmental factor is required. No scoping comments were received on the NOP requesting any additional evaluation of this environmental factor.

4.14 TRANSPORTATION AND TRAFFIC

4.14.1 INTRODUCTION

This section of the EIR describes the existing transportation and traffic conditions at the UCR campus and analyzes the potential for implementation of the proposed 2005 LRDP Amendment 2 to result in traffic and transportation impacts.

The information in this section is based on information in the Traffic Impact Analysis prepared for the 2005 LRDP Amendment 2 by Fehr & Peers, which is included as **Appendix 4.14** in this document. Bibliographic entries for reference materials appear in **subsection 4.14.5**, **References**.

In response to the Notice of Preparation issued for this EIR, a member of the public requested that UCR discuss the proposed project's compliance with local pedestrian and bicycle initiatives. The California Department of Transportation (Caltrans) stated that the agency did not expect the proposed project to result in direct or adverse impacts on the nearby state transportation facilities. The agency also noted that should the project involve any improvements within the state right-of-way, an encroachment permit would be needed. In its letter on the NOP, the City of Riverside stated that the Draft EIR needs to expand further the analysis provided in the NOP/Initial Study related to traffic. The City also requested that the traffic impact analysis prepared for the project be forwarded to the City for review and comment, and stated that UCR was responsible for mitigating traffic impacts caused by campus development. All of these scoping comments were considered in the analysis presented below.

4.14.2 EXISTING CONDITIONS

4.14.2.1 Project Study Area

The project study area includes the West Campus which is roughly bounded by Martin Luther King Jr. Boulevard (MLK) to the south, University Avenue to the north, Chicago Avenue to the west, and I-215/SR-60 to the east. The *SOM* site is located at the northeast corner of Iowa Avenue and MLK. The East Campus lies to the east of I-215/SR-60, bound roughly by Blaine Street to the north, Watkins Drive to the northeast, Valencia Hill Drive to the east, and I-215/SR-60 to the south.

4.14.2.2 Study Area Roadways

Major roadways on the West Campus include MLK, University Avenue, Chicago Avenue, Iowa Avenue, Canyon Crest Avenue, and I-215/SR-60. Specific roadway segments included in the analysis are as follows:

- MLK/14th Street
  - Canyon Crest Drive to Iowa Avenue
  - Iowa Avenue to Chicago Avenue
- Chicago Avenue
  - MLK to University Avenue
  - University Avenue to Blaine Street
- University Avenue
  - I-215 to Iowa Avenue
  - Iowa Avenue to Chicago Avenue
- Iowa Avenue
  - MLK to University Avenue
  - University Avenue to Blaine Avenue

4.14.2.3 Project Study Intersections

Within the study area, the following intersections were selected for analysis based on a review of the roadway network, the likely approach and departure routes for the project traffic, their proximity to the *SOM* site, and consultation with the City of Riverside:

1. Chicago Avenue/Third Street
2. Iowa Avenue/Blaine Street
3. Blaine Street/Rustin Avenue
4. Blaine Street/Canyon Crest Drive
5. Blaine Street/Watkins Drive
6. Iowa Avenue/Linden Street

7. Linden Street/Canyon Crest Drive
8. Linden Street/Aberdeen Drive
9. University Avenue/Kansas Avenue
10. Chicago Avenue/University Avenue
11. Iowa Avenue/University Avenue
12. University Avenue/University Village
13. I-215 SB Ramp/University Avenue
14. I-215 NB Ramp/University Avenue
15. Parking Lot 1/Campus Drive
16. Big Springs Road/Campus Drive
17. Big Springs Road/Watkins Drive
18. Campus Drive/Canyon Crest Drive
19. Campus Drive/Citrus Drive
20. Eucalyptus Drive/Campus Drive
21. Chicago Avenue/MLK
22. Iowa Avenue/MLK
23. Lot 30/MLK
24. Canyon Crest Drive/MLK
25. I-215 SB Ramps/MLK
26. I-215 NB Ramps/MLK
27. Le Conte Drive/Chicago Ave
28. Central Avenue/Chicago Avenue
29. Central Avenue/Canyon Crest Drive
30. Central Avenue/SR60 SBR
31. Central Avenue/SR60 NBR

32. Central Avenue/Box Springs Boulevard

The location of each project study intersection is shown on **Figure 4.14-1, Project Study Intersections**.

4.14.2.4 Analysis Methodologies

The intersection analysis employs a methodology based on empirical research conducted by the Transportation Research Board and other authorities.

Signalized intersection operations are evaluated using methodologies provided in the 2000 Highway Capacity Manual (HCM) (Transportation Research Board). These methodologies assess average control delays and then assign a corresponding letter grade that represents the overall condition of the intersection. These grades range from level of service (LOS) A (minimal delay) to LOS F (excessive congestion). LOS E represents at-capacity operations. For this study, levels of service are calculated using Synchro 6.0 software, which implements 2000 HCM methodologies. Synchro software allows the input of signal timing and coordination data to more accurately reflect actual conditions. Descriptions of the LOS letter grades for signalized intersections are provided in **Table 4.14-1, Signalized Intersection LOS Criteria**. Descriptions of the LOS letter grades for unsignalized intersections are provided in **Table 4.14-2, Unsignalized Intersection LOS Criteria**.

4.14.2.5 Existing Roadway Facilities

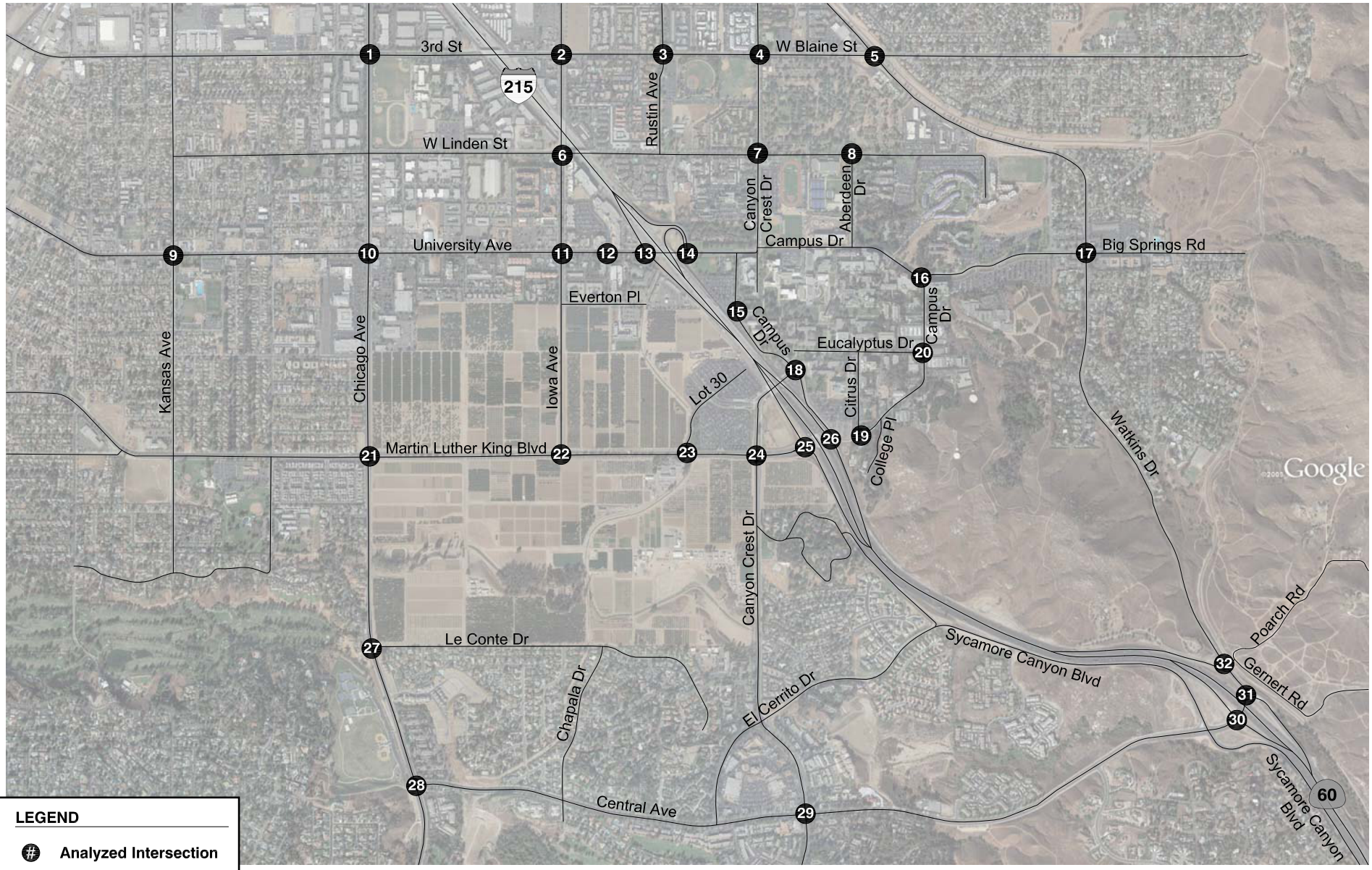
On-Campus Roadways

Aberdeen Drive

Aberdeen Drive is a two-lane divided campus roadway with bike lanes. No parking is allowed on this access road, which is located on the north side of campus.

Linden Street

On the UCR campus, Linden Street is a two-lane undivided roadway with bike lanes between Canyon Crest Drive and Aberdeen Drive and a 40 mile-per-hour (mph) speed limit.



SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-1**

Project Study Intersections

1031-001•01/11

Table 4.14-1
Signalized Intersection LOS Criteria

LOS	Description	Delay (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	< 15.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 15.0 to 25.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 25.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55.0 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80.0

Source: Highway Capacity Manual (Transportation Research Board, 2000)

Table 4.14-2
Unsignalized Intersection LOS Criteria

LOS	Description	Delay (Seconds)
A	Little or no delays	< 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: Highway Capacity Manual (Transportation Research Board, 2000)

Campus Drive Loop

Campus Drive is subdivided into four segments: North, East, South, and West, but operationally it is in fact a two-way loop road encircling most of the campus academic core (there is no road between the Surge building and Campus Crest Drive). West Campus Drive is a four-lane divided roadway between University Avenue and Hinderaker Hall near the information kiosk, but the remainder of the loop is a two-lane undivided roadway providing access to parking lots in and adjacent to the academic core. There is no through connection from North Campus Drive to University Avenue and Canyon Crest on the west side of campus. No parking is allowed on Campus Drive itself. The road is posted as a bike route, but no pavement striping is provided. North and West Campus Drive have a sidewalk on both sides of the street, while East Campus Drive has a sidewalk on only one side, and South Campus Drive has no sidewalk. The speed limit on Campus Drive is 15 mph.

Citrus Drive

Citrus Drive is a north/south two-lane undivided roadway between Eucalyptus Drive and South Campus Drive. Perpendicular parking along the west side of this street includes both metered spaces and unmetered preferred spaces. Citrus Drive provides access to UCR's Graduate School of Management.

Eucalyptus Drive

Eucalyptus Drive is an east/west two-lane undivided roadway linking Citrus and East Campus Drives. There is a sidewalk on each side of the street, but no bicycle lanes and no parking. Eucalyptus Drive provides access to the service/delivery area of Rivera Library.

Big Springs Road

Big Springs Road is an east/west two-lane partly divided roadway linking East Campus Drive and Valencia Hill Drive and then Watkins Drive. Big Springs Road provides an entranceway to the UCR campus from the east, with bicycle lanes and no parking along its entire length. From Valencia Hill Drive east, it is a city street.

Martin Luther King Jr. Boulevard

On the UCR campus, MLK is a four-lane divided arterial with an 88-foot curb-to-curb width, a 50 mph speed limit, and bicycle lanes.

Iowa Avenue

On the UCR campus, Iowa Avenue is a four-lane divided arterial with an 88-foot curb-to-curb width, a 45 mph speed limit, and bicycle lanes. South of University Avenue, Iowa Street has two lanes, undivided.

Canyon Crest Drive

Canyon Crest Drive is a four-lane undivided arterial with a 88-foot curb-to-curb width, a 45 mph speed limit, and bicycle lanes south of MLK. Canyon Crest becomes a four-lane divided roadway about 0.5 mile south of MLK.

Off-Campus Roadways

Spruce Street

Spruce Street is an east/west roadway extending from Downtown Riverside to Watkins Drive. Spruce Street is constructed as a major/primary arterial with four vehicle lanes (alternating divided/undivided), and a speed limit of 40 mph. East of Iowa Avenue, Spruce Street becomes a two-lane, undivided roadway with a speed limit of 25 mph. There are no bicycle lanes on Spruce Street.

Blaine Street

Blaine Street is an east/west roadway extending from Downtown Riverside (as Third Street) to the UCR campus ending at Watkins Drive. Blaine Street is constructed to its General Plan cross-section as a Major Arterial, with four vehicle lanes, bike lanes, and no curbside parking within its 88-foot curb-to-curb width. The speed limit on Blaine Street is 40 mph. Blaine Street has a full diamond interchange with the I-215/SR-60 freeway.

Linden Street

Linden Street is an east/west roadway extending from Kansas Avenue to the UCR campus. West of Canyon Crest Drive, Linden Street is a public roadway, while east of that point it is within UCR's jurisdiction. Linden Street is currently constructed as a Secondary Street, with two undivided vehicle lanes within its 66-foot curb-to-curb width. Linden Street has bike lanes and curbside parking along portions of its length within the City's jurisdiction. The speed limit on Linden Street is 35 to 40 mph.

University Avenue

University Avenue is an east/west divided roadway extending from Downtown Riverside to the UCR campus. University Avenue is constructed to its General Plan cross-section as a Major Arterial, with four

vehicle lanes within its 88-foot curb-to-curb width. University Avenue has bike lanes along portions of its length. The speed limit on University Avenue is 35 to 40 mph. University Avenue has a modified diamond interchange with the I-215/SR-60 freeway.

Martin Luther King Jr. Boulevard

MLK is an east/west roadway extending from Downtown Riverside (as 14th Street) to the UCR campus at Canyon Crest Drive. MLK and beyond to Sycamore Canyon Boulevard is constructed to its General Plan cross-section as a Major Arterial, with four vehicle lanes, bike lanes, and median within its 110-foot curb-to-curb width. Speed limit is 35 mph west of Chicago Avenue and 50 mph east of Chicago Avenue. MLK has a partial interchange with the I-215/SR-60 freeway. The freeway interchange will undergo demolition and new construction to provide full diamond interchange with MLK under the freeway in the future.

Central Avenue

Central Avenue is an east/west roadway extending from Chicago Avenue to the I-215/SR-60 freeway. Central Avenue is constructed to its General Plan cross-section as a Major Arterial, with four vehicle lanes and bike lanes within its 88-foot curb-to-curb width. The speed limit on Central is 45 to 55 mph. Central Avenue has a full-modified diamond interchange with the I-215/SR-60 freeway at Watkins Drive.

Kansas Street

Kansas Street is an undivided north/south roadway located west of Chicago Avenue with one lane each way and a speed limit of 35 mph. North of Blaine Street, Kansas Street has two lanes each way with a speed limit of 35 mph. North of the railroad tracks the roadway reverts to one lane each way. There are no bicycle lanes on Kansas Street. Curbside parking is permitted on most segments.

Chicago Avenue

Chicago Avenue is one of the primary north/south roadways in the eastern part of the City. In the study area it extends from beyond Central Avenue to past the I-215/SR-60 freeway near Spruce Street (Chicago Avenue has no freeway interchange). Chicago Avenue is constructed to its General Plan cross-section as a Major Arterial, with four vehicle lanes within its 110-foot divided curb-to-curb width north of University Avenue. Chicago Avenue has a speed limit of 40 mph.

Iowa Avenue

Iowa Avenue is a north/south roadway extending from MLK at the UCR campus to beyond Spruce Street. Adjacent to the UCR campus, Iowa Avenue is a two lane secondary street with a 66-foot curb-to-curb width, a 45 mph speed limit, and no bicycle lanes. North of Everton Place, Iowa Avenue is a 110-foot Major Arterial with four vehicle lanes, bike lanes on some segments, and median just north of University Avenue. Iowa Avenue has no freeway interchange.

Canyon Crest Drive

Canyon Crest Drive is one of the primary north/south access roadways in the City with a portion, not under the City's jurisdiction, going through the UCR campus, with West Campus Drive forming a link between the discontinuous north and south segments of the roadway. Within the City jurisdiction south of MLK, Canyon Crest Drive is constructed to its General Plan cross-section as a Major Arterial, with four vehicle lanes within its 110-foot divided curb-to-curb width and a speed limit of 45 mph. There is no bicycle lane on Canyon Crest south of Central Avenue. North of University Avenue, Canyon Crest Drive is a Major Arterial, with four undivided vehicle lanes, bike lanes, and very limited parking within its 88-foot curb-to-curb width.

Watkins Drive

Watkins Drive is a northwest/southeast roadway forming the northeastern boundary of the UCR campus. Watkins Drive is constructed as an Arterial, with four undivided vehicle lanes, bike lanes, and a 45 mph speed limit. South of Blaine Street, Watkins Drive is currently striped as a two-lane undivided roadway with bike lanes within its 88-foot curb-to-curb width. Watkins Drive is a two-lane divided roadway south of Valencia Hills Drive, with bicycle lanes and a 35 mph speed limit. Parallel parking is allowed on both sides of the street. Watkins Drive is reduced to a two-lane undivided roadway in the Box Springs area with bike lanes and no parking. Watkins has a full diamond interchange with the I-215/SR-60 freeway at Central Avenue.

Big Springs Drive

Big Springs Drive is a two-lane partially divided roadway extending through the eastern part of the UCR campus and entering the City's jurisdiction at Valencia Hill Drive. Big Springs Drive then extends into the Box Springs area, ending at the RCTC railroad tracks. There is parking on both sides of the road and a speed limit of 35 mph.

I-215/SR-60

Interstate 215/State Route 60 are two north-south freeways, which merge between their junction with SR-91 to the north and Box Springs Road to the south. I-215, which provides service to San Bernardino and San Diego counties, varies between a four- and eight-lane roadway, and terminates at I-15 to both the north in Devore and the south in Murrieta. SR-60 provides service to San Bernardino and Los Angeles counties, and terminates at I-10 in both Los Angeles to the west and Beaumont to the east. The roadway varies between four and eight lanes in width. Proximate to the campus, I-215 and SR-60 function as one freeway, with three travel lanes in each direction.

SR-91

State Route 91 has a major interchange with I-215 and SR-60 north of the University. This freeway has three mixed-flow lanes in each direction at this point, with high-occupancy vehicle lanes west of the downtown area. SR-91 has a major interchange at University Avenue.

Lot 30

Lot 30 has a two-lane roadway that begins at its intersection with MLK. The roadway then terminates at a large parking lot, which provides parking for UCR students and staff.

4.14.2.6 Public Bus Transit and Rail Facilities

There are 11 transit lines (Lines 1, 10, 13, 14, 16, 22, 25, 51, 53, 204, 208, and 210) which operate in the project study area. The lines are operated by Riverside Transit Agency (RTA), which provides service within Riverside County. RTA offers both traditional bus routes and "CommuterLink" routes, the latter of which operate during peak commute periods and terminate at major transit hubs.

RTA and UCR partner to offer "UPASS" to the campus's currently enrolled students and to current faculty and staff employees. Via UPASS, students, faculty, and staff may ride on any RTA route at any time for free by swiping their UCR ID card when boarding. RTA records the card number, boarding date and time and the bus route boarded, forwarding the data monthly to UCR. The Campus reimburses RTA the boarding costs at a negotiated rate. The UPASS Agreement and rate structure are reviewed and renewed annually.

Metrolink operates a commuter rail service within Southern California. There is a Metrolink station in downtown Riverside, approximately 1.5 miles from UCR. RTA provides service between the train station and the campus. RTA lines also provide service to Metrolink Stations in Corona and Montclair. Additionally, Amtrak trains also stop at this station.

4.14.2.7 Campus Transit Services

In addition to UPASS, UCR contracts with RTA to provide two routes that serve the campus and nearby community. Route 51, named the *Crest Cruiser,* and Route 53, called the *Bear Runner,* are operated during the fall, winter, and spring academic quarters when classes are in session. Again, students, faculty, and staff may ride the two routes for free. The Routes carry mostly students who live in nearby apartment and condominium communities that are privately or UCR-owned. The Crest Cruiser enters UCR along Canyon Crest and Blaine traveling south. The Route continues by turning south on to West Campus Drive, and exits UCR traveling south on Canyon Crest at MLK. Headways for the Crest Cruiser are 40-minutes and the route runs Monday through Friday. The Bear Runner travels the campus loop road from Aberdeen Drive to Canyon Crest, and stopping at Lot 30, north of MLK. The Bear Runner's headways are 32-Minutes and the route is in service Monday through Thursday.

4.14.2.8 Ridesharing

In addition to public transportation options, UCR offers vanpool and carpool programs as part of its travel demand management program. These programs are described below:

- Vanpool Program – UCR currently offers 25 vanpools to its students, faculty, and staff. UCR vanpools are assigned from seven to 10 passengers, and travel between the campus and local communities. UCR vanpools originate in Los Angeles, Orange, San Bernardino and Riverside counties, and provide service as far as Victorville to the north, West Los Angeles to the west, Temecula to the south, and Palm Springs to the east. Riders meet at one location in their city of origin in the morning, and leave the campus at a fixed time. The fare rate for riding in a vanpool depends on leasing and operating costs, but is partially subsidized by the Campus. Riders must commit to using a vanpool for at least one calendar month to be eligible to ride. At present, most vanpools operated by UCR are full, and many have waitlists of interested riders as well. UCR offers free vanpool parking on campus as one incentive to riders.

- Carpool Program – Graduate students, staff, and faculty who choose to carpool to campus can register their vehicles to receive a carpool permit. The permit allows for reduced parking fees and up to 24 days of complimentary on-campus parking. All carpool participants are responsible for a portion of the parking costs, so the carpool program has a system for all riders to contribute parking fees through pre-tax payroll deductions. Additionally, UCR provides designated carpool spaces within a few lots.

- Guaranteed Ride Home – UCR offers a guaranteed ride home program for all faculty and staff who are enrolled in alternative transportation. This incentive is intended to be used in emergency situations – such as when a member becomes ill at work, is faced with unscheduled overtime, or has a family emergency. The Campus provides the member with a one-day vehicle rental in these situations or schedules taxi service.

4.14.2.9 Bicycle/Pedestrian Network

Most of the roadways within the project study area have sidewalks on both sides of the roadway, with the exception of University Avenue on the north side between the I-215 ramps and West Campus Drive and MLK near the I-215 ramps to Chicago Avenue on both sides. Additionally, there are pedestrian "walk/don't walk" indicators at all of the signalized intersections and marked crosswalks at those locations that have sidewalks. Class II bicycle lanes are found along the following roadways near the West Campus:

- MLK – Ottawa Avenue to Canyon Crest Drive
- University Avenue – Ottawa Avenue to Iowa Avenue
- Linden Street – Kansas Avenue to Avocado Street
- Iowa Avenue – University Avenue to Blaine Street
- Canyon Crest Drive – Central Avenue to MLK

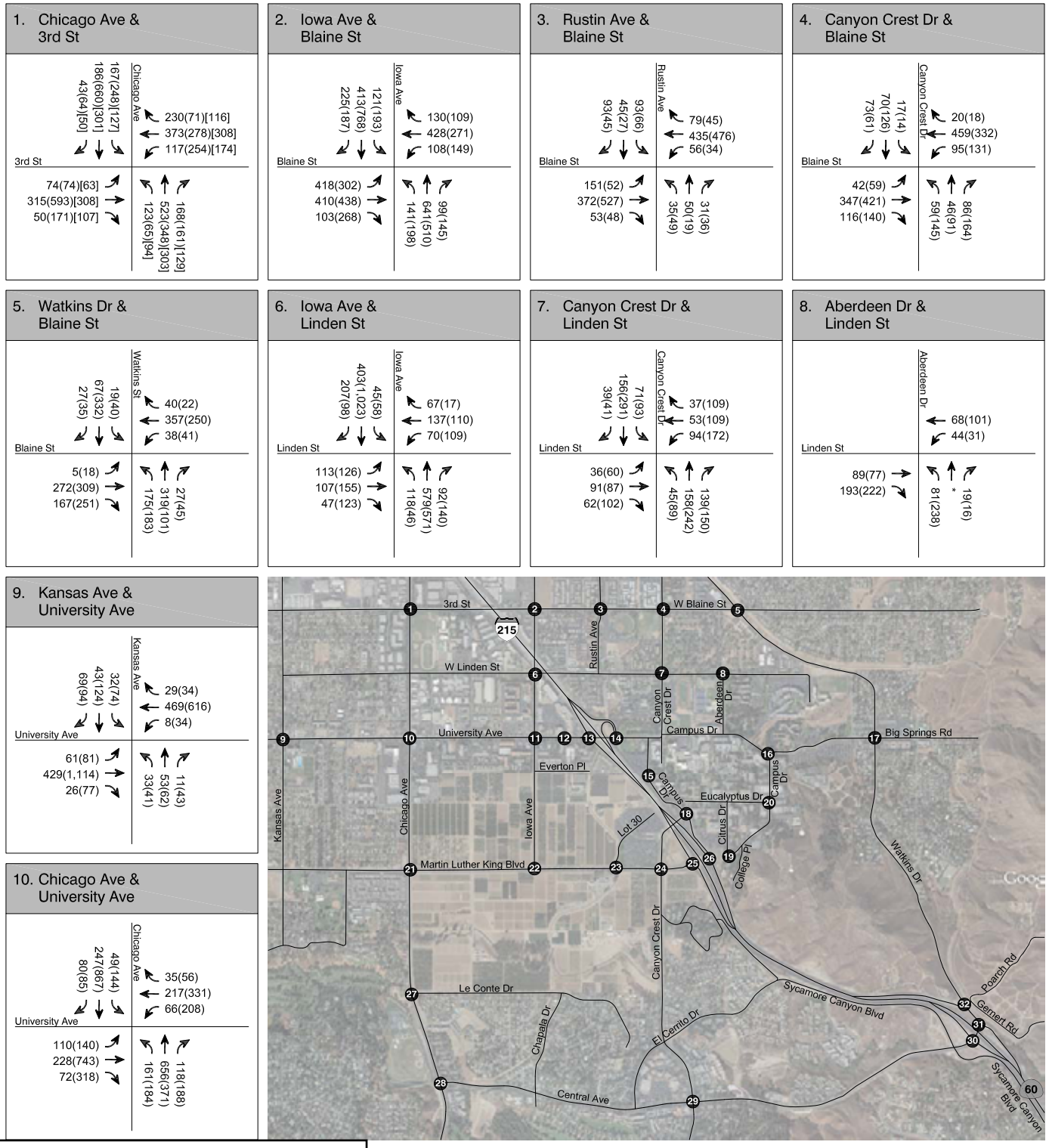
4.14.2.10 Traffic Data Collection

Intersection traffic counts were collected for the traffic impact analysis in January 2008 from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Additional intersection counts were collected in September 2009 and October 2010. The highest 1-hour peak of traffic volumes during the morning, mid-day, and evening hours are shown on **Figures 4.14-2a** through **2d**. The existing lane configurations at the time the traffic data was collected are also shown on **Figures 4.14-3a** through **3d**. Existing signal timings were obtained from the City of Riverside and Caltrans. All peak hour factors used in the assessment were field measured.

4.14.2.11 Existing Intersection Conditions

As shown in **Table 4.14-3, Intersection Levels of Service – Existing AM and PM Peak Hour**, most of the study intersections currently operate at an acceptable Level of Service of D or better during the AM and PM peak periods. The following six intersections currently operate at a deficient Level of Service during one or more peak period:

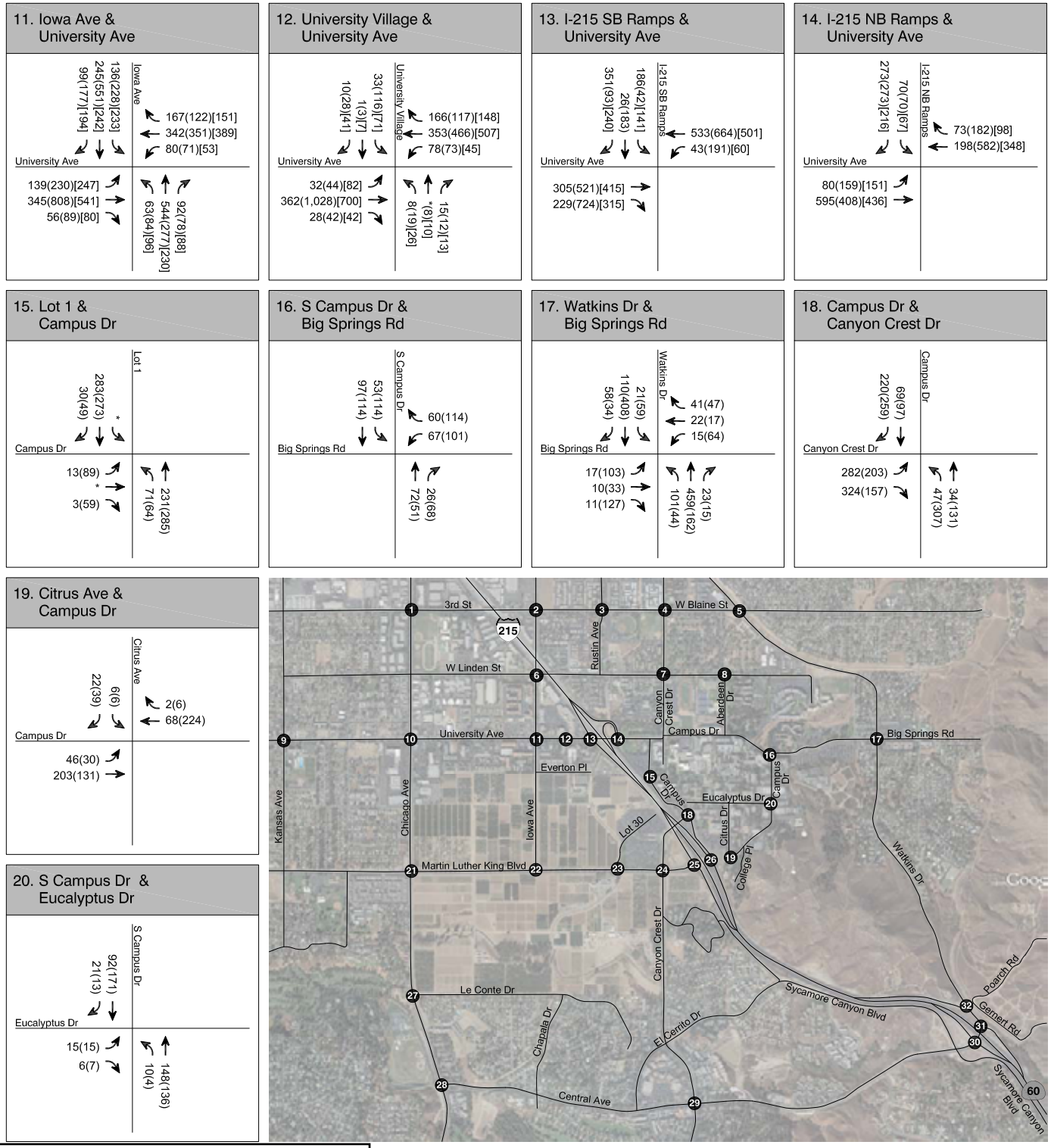
- Third Street/Chicago Avenue (AM peak hour)
- Blaine Street/Rustin Avenue (AM peak hour)
- MLK/Chicago Avenue (AM & PM peak hour)
- MLK/Canyon Crest Drive (AM and PM peak hour)



SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-2a**

Existing Conditions Peak Hour Traffic Volumes



LEGEND

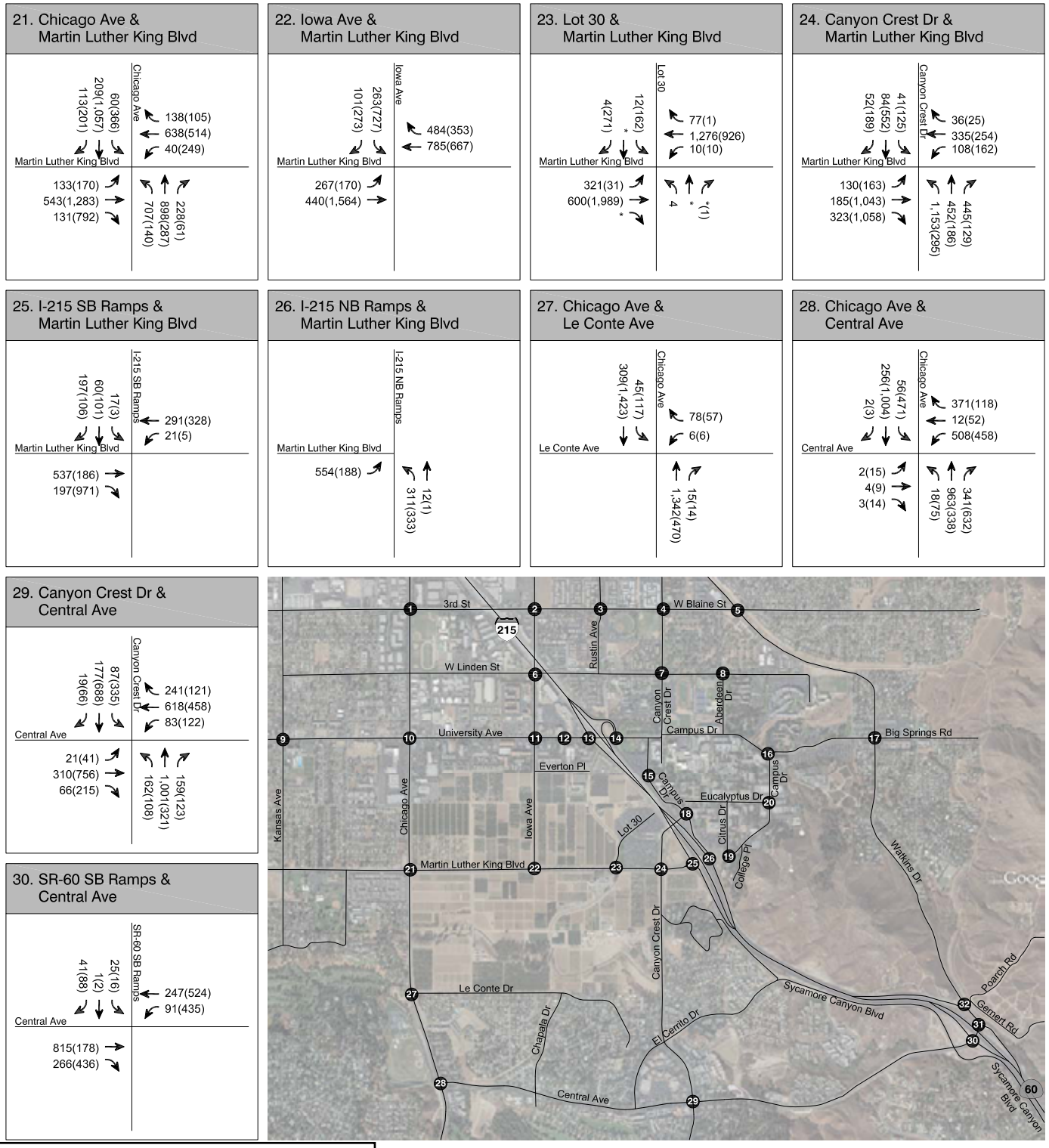
- # **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-2b**

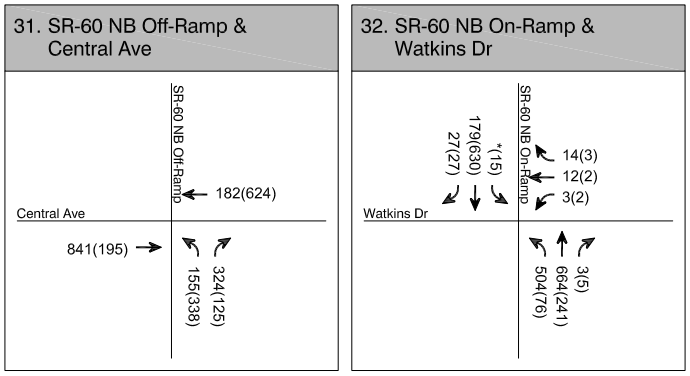
Existing Conditions Peak Hour Traffic Volumes

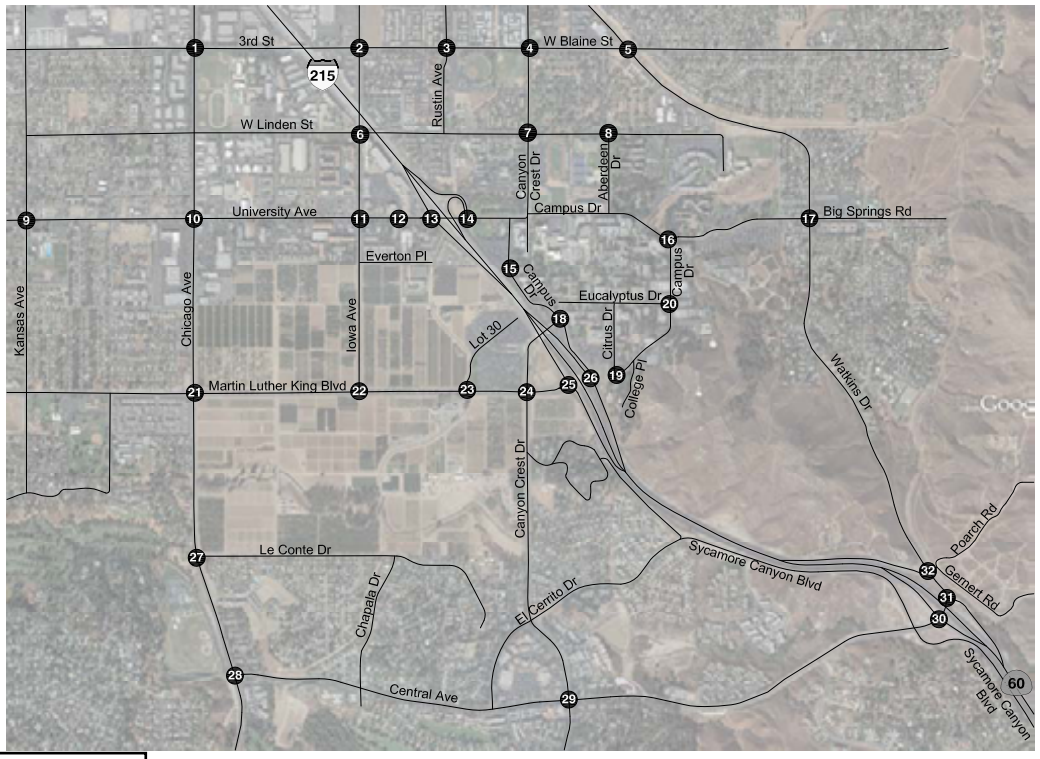


SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-2c**

Existing Conditions Peak Hour Traffic Volumes





LEGEND

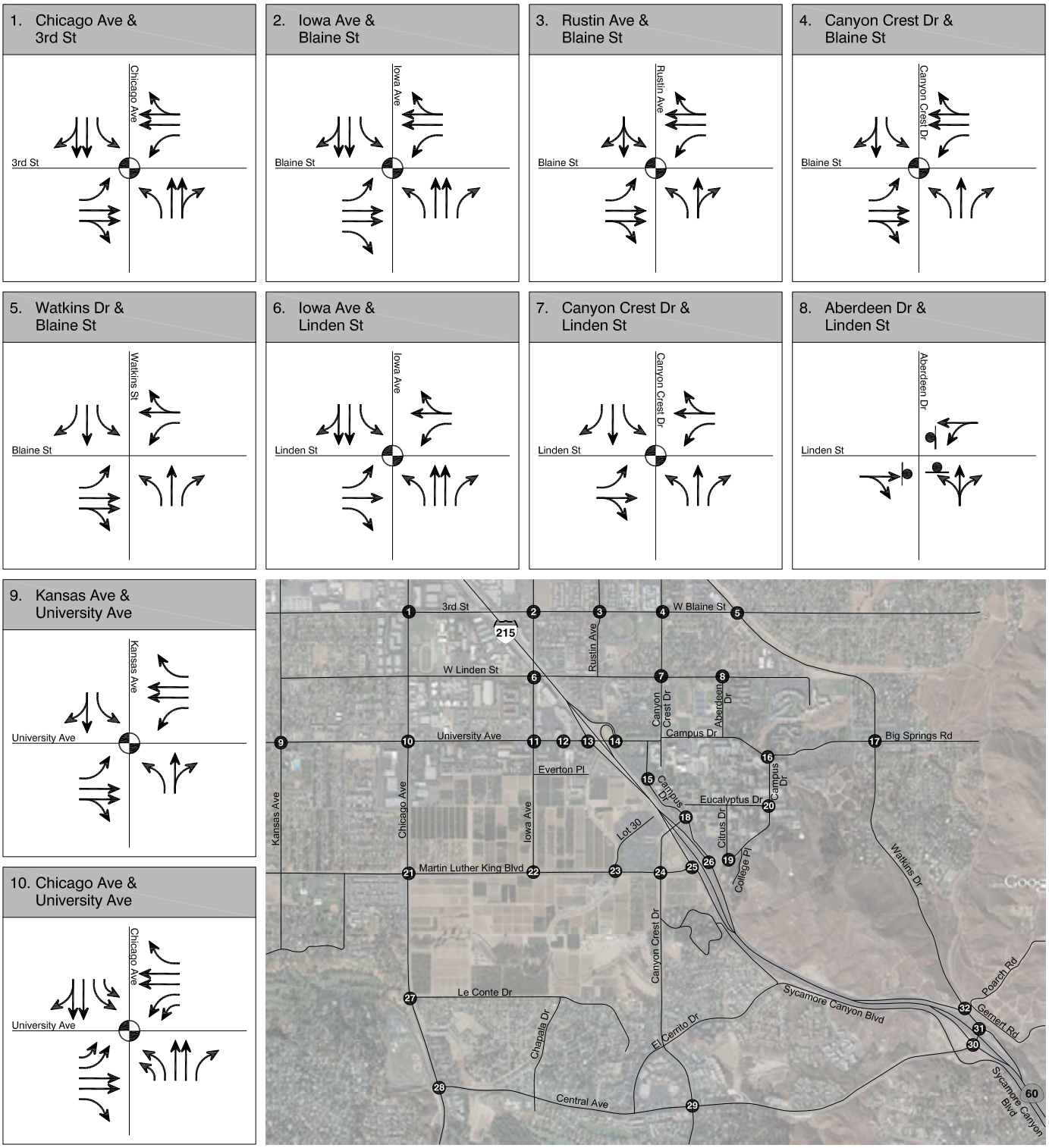
- (#) **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-2d**

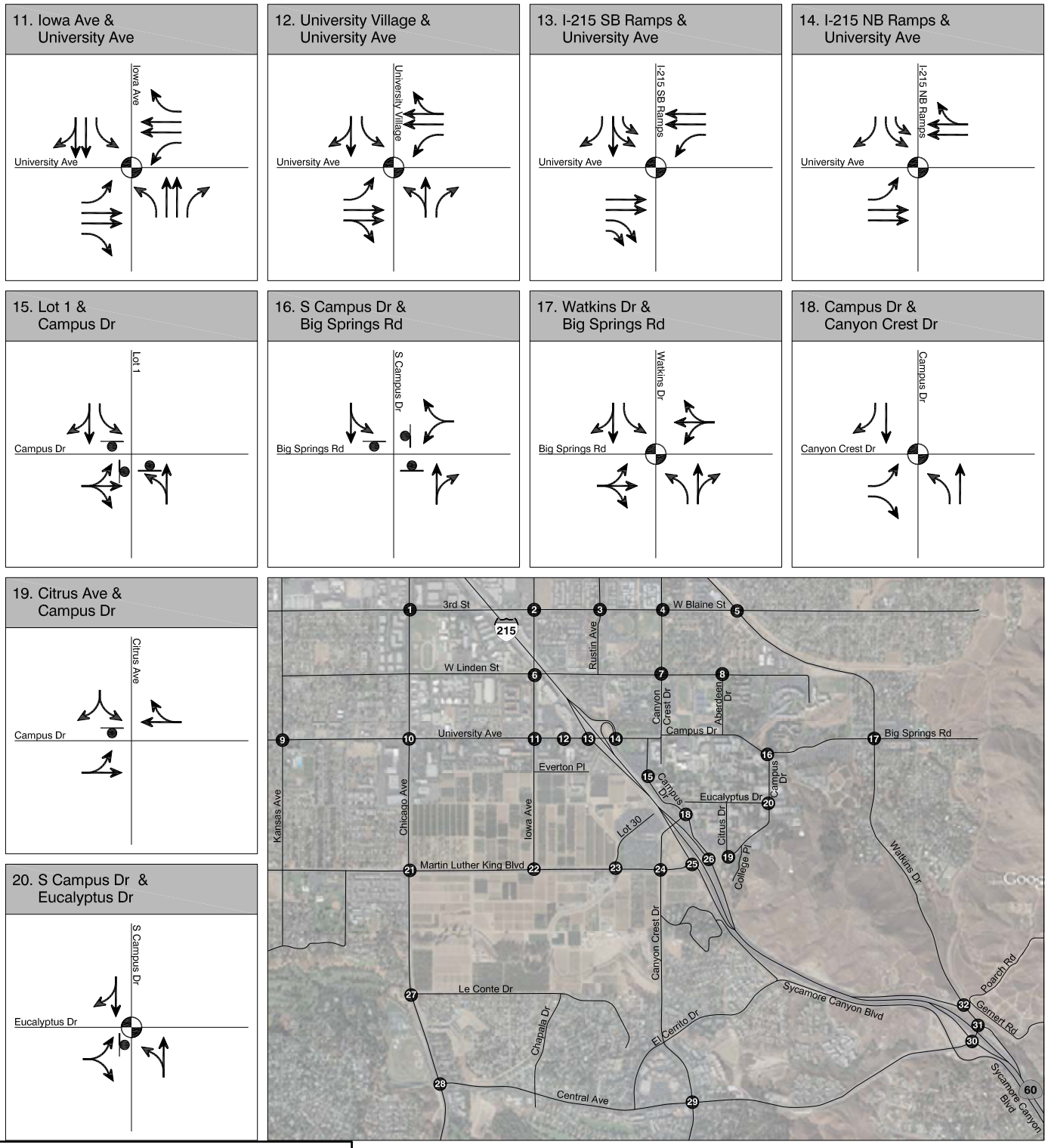
Existing Conditions Peak Hour Traffic Volumes



SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-3a**

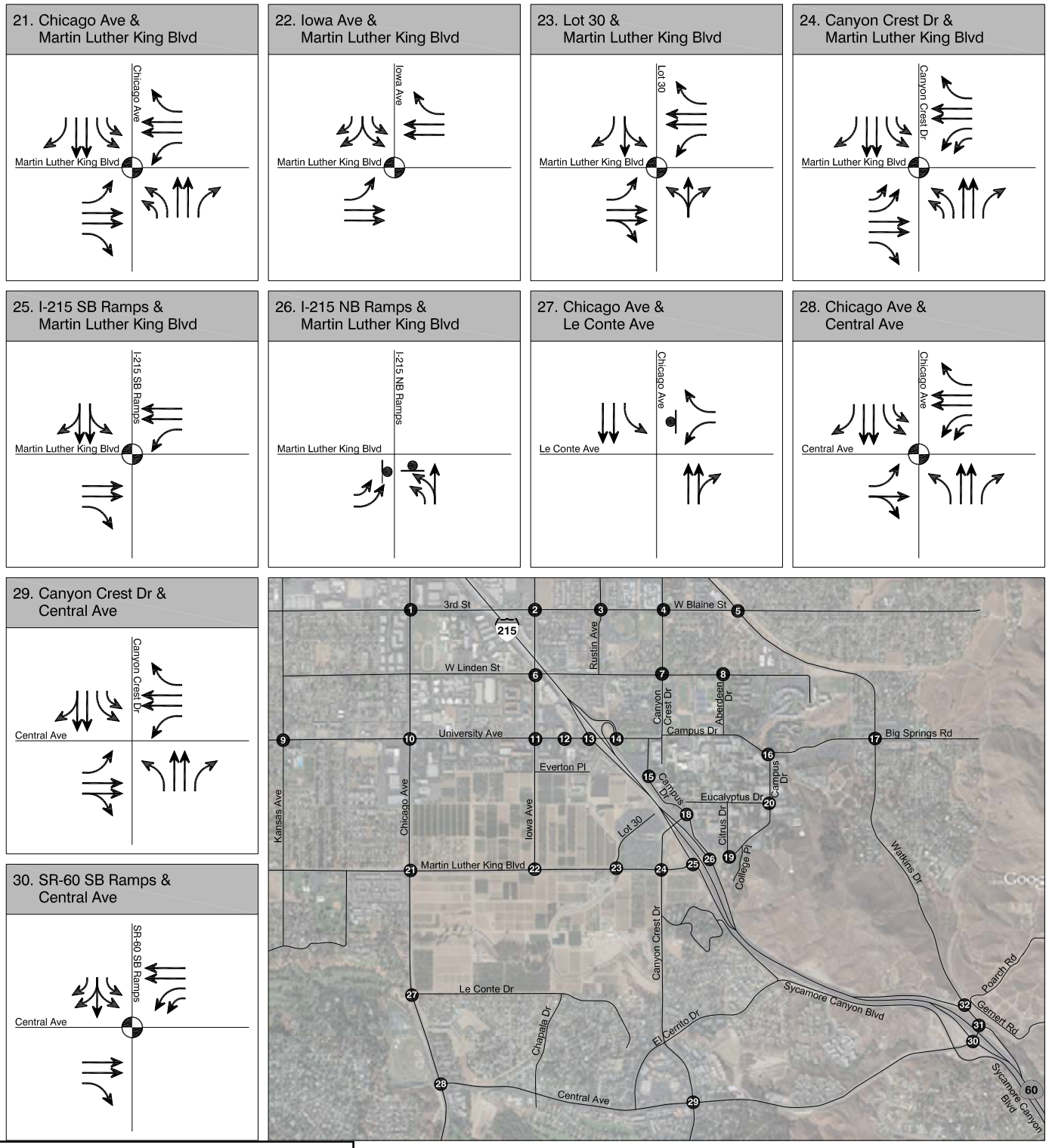
Lane Configurations



SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-3b**

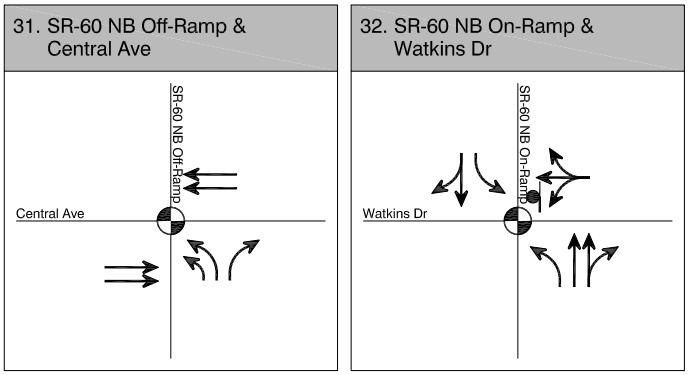
Lane Configurations

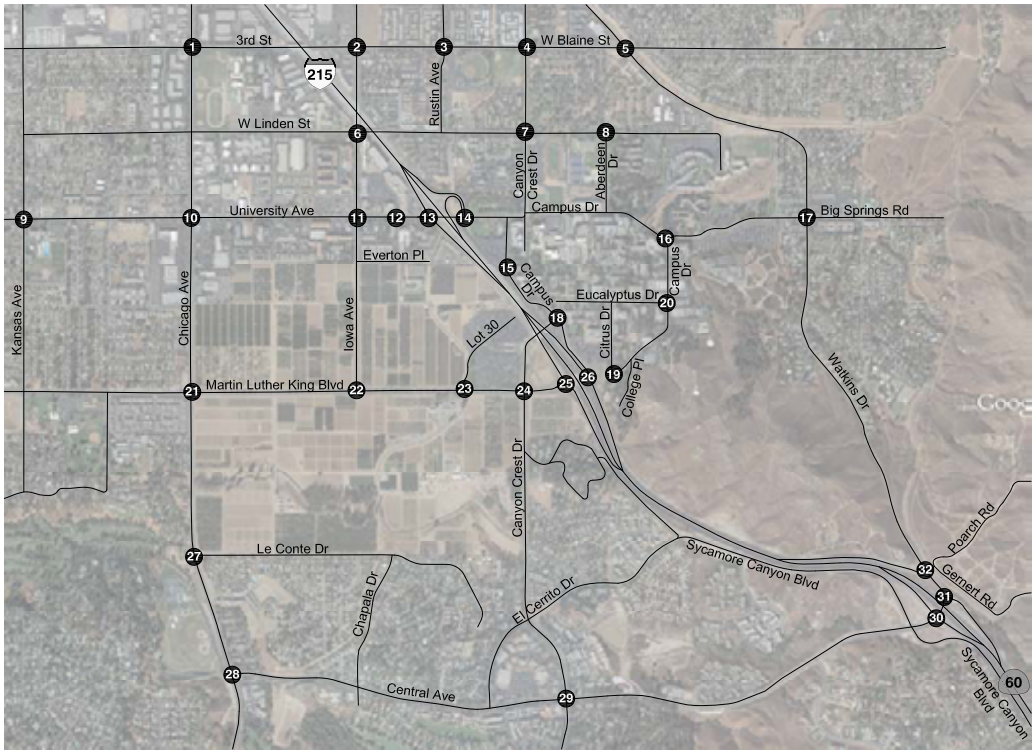


SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-3c**

Lane Configurations





LEGEND

- # **Analyzed Intersection**
- **Stop Controlled**
- **Traffic Signal**

NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-3d**

Lane Configurations

- Central Avenue/Chicago Avenue (AM and PM peak hour)
- Watkins Drive/SR-60 NB On Ramp (AM peak hour)

Table 4.14-3
Intersection Levels of Service – Existing AM and PM Peak Hour

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS
Third Street/Chicago Avenue	Signalized	**>80**	**F**	50.2	D
Blaine Street/Iowa Avenue	Signalized	44.0	D	35.5	D
Blaine Street/Rustin Avenue	Signalized	**64.6**	**E**	20.7	C
Blaine Street/Canyon Crest Drive	Signalized	19.5	B	22.0	C
Blaine Street/Watkins Drive	Signalized	27.1	C	31.2	C
Linden Street/Iowa Avenue	Signalized	23.9	C	40.9	D
Linden Street/Canyon Crest Drive	Signalized	25.0	C	28.3	C
Linden Street/Aberdeen Drive	AWSC	8.9	A	10.9	B
University Avenue/Kansas Avenue	Signalized	15.1	B	39.2	D
University Avenue/Chicago Avenue	Signalized	33.8	C	47.5	D
University Avenue/Iowa Avenue	Signalized	32.0	C	41.2	D
University Avenue/University Village	Signalized	13.6	B	16.7	B
University Avenue/I-215 SB Ramps	Signalized	18.7	B	16.7	B
University Avenue/I-215 NB Ramps	Signalized	18.0	B	21.1	C
Parking Lot 1/Campus Drive	AWSC	10.8	B	30.8	D
Big Springs Rd/Campus Drive	AWSC	8.7	A	9.5	A
Big Springs Road/Watkins Drive	AWSC	19.9	C	18.7	C
Canyon Crest Drive/Campus Drive	Signalized	9.2	A	16.6	B
Citrus Drive/Campus Drive	SSSC	9.6	A	10.9	B
Eucalyptus Drive/Campus Drive	SSSC	10.4	B	11.2	B
MLK/Chicago Avenue	Signalized	48.7	D	**>80**	**F**
MLK/Iowa Avenue	Signalized	22.3	C	48.7	D
MLK/Lot 30	Signalized	25.5	C	26.5	C
MLK/Canyon Crest Drive	Signalized	**>80**	**F**	**>80**	**F**
MLK/I-215 SB Ramps	Signalized	18.3	B	17.6	B
MLK/I-215 NB Ramps	AWSC	13.0	B	9.9	A
Le Conte Drive/Chicago Avenue	SSSC	22.3	C	14.0	B
Central Avenue/Chicago Avenue	Signalized	**>80**	**F**	30.0	C
Central Avenue/Canyon Crest Drive	Signalized	35.6	D	40.6	D
Central Avenue/SR-60 SB Ramps	Signalized	17.7	B	15.2	B
Central Avenue/SR-60 NB Off Ramp	Signalized	19.8	B	16.8	B
Watkins Drive/SR-60 NB On Ramp	SSSC	**>50**	**F**	20.9	C

Source: Fehr & Peers, 2010

[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*

As requested by the City of Riverside, mid-day levels of service at selected City intersections were also evaluated. As shown in **Table 4.14-4, Intersection Levels of Service – Existing Mid-Day Peak Hour**, all of the intersections currently operate at an acceptable Level of Service of D or better during the mid-day peak period.

Table 4.14-4
Intersection Levels of Service – Existing Mid-Day Peak Hour

Intersection	Control	Mid-Day Peak Hour	
		Delay[1]	LOS
Third Street/Chicago Avenue	Signalized	32.5	C
University Avenue/Iowa Avenue	Signalized	40.4	D
University Avenue/University Village	Signalized	15.8	B
University Avenue/I-215 SB Ramps	Signalized	16.9	B
University Avenue/I-215 NB Ramps	Signalized	19.2	B

Source: Fehr & Peers, 2010

[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*

4.14.2.12 Existing Roadway Segment Operations

As shown in **Table 4.14-5, Roadway Segment Volumes and Operations**, all of the existing study area roadway segments operate at LOS D or better.

Table 4.14-5
Roadway Segment Volumes and Operations

Roadway	Classification	LOS D Volume	Existing Volume	LOS
MLK/14th Street				
Canyon Crest Drive to Iowa Avenue	110 ft. Arterial (4 lanes)	33,000	22,310	D or better
Iowa Avenue to Chicago Avenue	110ft. Arterial (4 lanes)	33,000	20,072	D or better
Chicago Avenue				
MLK to University Avenue	110 ft. Arterial (4 lanes)	33,000	17,660	D or better
University Avenue to Blaine Street	110 ft. Arterial (4 lanes)	33,000	16,696	D or better
University Avenue				
I-215 to Iowa Avenue	110 ft. Arterial (4 lanes)	33,000	20,500	D or better
Iowa Avenue to Chicago Avenue	110 ft. Arterial (4 lanes)	33,000	20,148	D or better
Iowa Avenue				
MLK to University Avenue	110 ft. Arterial (4 lanes)	33,000	12,003	D or better
University Avenue to Blaine Street	110 ft. Arterial (4 lanes)	33,000	18,761	D or better

Source: Fehr & Peers, 2010

[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*

4.14.2.13 Existing Freeway Segment Operations

As shown in **Table 4.14-6, Freeway Levels of Service – Existing AM and PM Peak Hour**, most of the freeway segments currently operate at an acceptable Level of Service of E or better during the AM and PM peak periods with the exception of I-215 southbound, between MLK and University Avenue during the PM peak hour.

Table 4.14-6
Freeway Levels of Service – Existing AM and PM Peak Hour

Freeway Segment	Peak Hour	Volume	LOS	V/C
I-215 NB, s/o 60	AM	7,066	D	0.79
	PM	6,636	C	0.74
I-215 SB, s/o 60	AM	5,894	D	0.79
	PM	5,921	D	0.79
I-215 NB, b/w 60 & Central	AM	7,455	E	0.99
	PM	6,625	D	0.88
I-215 SB, b/w 60 & Central	AM	3,602	A	0.30
	PM	7,212	C	0.60
I-215 NB, b/w Central & MLK	AM	8,356	D	0.93
	PM	6,949	D	0.77
I-215 SB, b/w Central & MLK	AM	4,702	B	0.49
	PM	8,403	D	0.88
I-215 NB, b/w MLK & University	AM	7,132	E	0.95
	PM	5,919	D	0.79
I-215 SB, b/w MLK & University	AM	5,779	C	0.61
	PM	**10,667**	**F(0)**	**1.12**
I-215 NB, b/w University & 3rd	AM	7,874	D	0.87
	PM	6,133	C	0.68
I-215 SB, b/w University & 3rd	AM	4,063	C	0.54
	PM	6,020	D	0.80
I-215 NB, b/w 3rd & Spruce	AM	7,980	C	0.73
	PM	5,794	B	0.53
I-215 SB, b/w 3rd & Spruce	AM	4,633	C	0.62
	PM	6,386	D	0.85
I-215 NB, n/o 91/60	AM	6,008	C	0.75
	PM	5,073	C	0.63
I-215 SB, n/o 91/60	AM	5,598	C	0.70
	PM	5,235	C	0.65
60 EB, e/o 215	AM	4,633	C	0.62
	PM	6,586	D	0.88

Freeway Segment	Peak Hour	Volume	LOS	V/C
60 WB, e/o 215	AM	7,384	C	0.67
	PM	6,541	C	0.59
60 EB, w/o 91/215	AM	5,598	C	0.75
	PM	5,235	C	0.70
60 WB, w/o 91/215	AM	6,008	C	0.75
	PM	5,073	C	0.63
91 EB, w/o 215/60	AM	5,186	C	0.69
	PM	4,229	C	0.56
91 WB, w/o 215/60	AM	6,683	C	0.70
	PM	6,210	C	0.65

Source: Fehr & Peers, 2010

4.14.3 REGULATORY FRAMEWORK

4.14.3.1 Federal and State

There are no federal or State transportation regulations applicable to the proposed project.

4.14.3.2 Local

County of Riverside

The Riverside County Congestion Management Plan (CMP) was prepared by the Riverside County Transportation Commission (RCTC) in consultation with the County and the cities in Riverside County. The focus of the CMP is the development of an Enhanced Traffic Monitoring System in which real-time traffic count data can be accessed by RCTC to evaluate the condition of the Congestion Management System (CMS) as well as meet other monitoring requirements at the State and federal levels. Per the adopted Level of Service (LOS) standard of "E," when a CMS segment falls to "F," a deficiency plan must be required. Preparation of a deficiency plan is the responsibility of the local agency where the deficiency is located. Other agencies identified as contributors to the deficiency are also required to coordinate with the development of the plan. The plan must contain mitigation measures, including Transportation Demand Management (TDM) strategies and transit alternatives, and a schedule of mitigating the deficiency. To ensure that the CMS is appropriately monitored to reduce the occurrence of CMP deficiencies, it is the responsibility of local agencies, when reviewing and approving development proposals to consider the traffic impacts on the CMS (UCR 2005).

The Riverside County General Plan (2003) includes a number of policies related to transportation network design, LOS levels, street improvements, pedestrian circulation, alternative transportation, non-

motorized transportation, and transportation systems management. In particular, Circulation Policy 2.1 states:

> *Maintain the following countywide target Levels of Service: LOS "C" along all County-maintained roads and conventional State highways. As an exception, LOS "D" may be allowed in Community Development areas, only at intersections of any combination of Secondary Highways, Major Highways, Arterials, Urban Arterials, Expressways, conventional State highways, or freeway ramp intersections. LOS "E" may be allowed in designated community centers to the extent that it would support transit-oriented development and walkable communities.*

City of Riverside

The City of Riverside General Plan (2007) includes objectives aimed at maintaining an effective transportation system throughout the City. A number of policies have been identified in support of furthering each of these objectives. Transportation Element objectives that are relevant to the campus are as follows:

Objective CCM-2	*Build and maintain a transportation system that combines a mix of transportation modes and transportation system management techniques, and that is designed to meet the needs of Riverside's residents and businesses, while minimizing the transportation system's impacts on air quality, the environment and adjacent development.*
Objective CCM-9	*Promote and support an efficient public multi-modal transportation network that connects activity centers in Riverside to each other and to the region.*
Objective CCM-10	*Provide an extensive and regionally linked public bicycle, pedestrian and equestrian trails system.*

4.14.4 IMPACTS AND MITIGATION MEASURES

4.14.4.1 Significance Criteria

The impacts on transportation and traffic from the implementation of the 2005 LRDP Amendment 2 would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- 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;

- 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;
- 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;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Intersections

As the lead agency for this project, the University has the authority to establish its own set of significance criteria. However, to maintain consistency with the City of Riverside, the City's significance criteria were used for intersections within the City's jurisdiction. For campus intersections, the University of California used its own set of significance criteria. **Table 4.14-7, Intersection LOS Criteria** summarizes the significance criteria for City and University intersections.

Table 4.14-7
Intersection LOS Criteria

Level of Service	City Significance Criteria[1]	University Significance Criteria
A	>10.0 seconds increased delay	
B	>10.0 seconds increased delay	
C	>8.0 seconds increased delay	
D	>5.0 seconds increased delay	
E	>2.0 seconds increased delay	Significant Impact
F	>1.0 seconds increased delay	Significant Impact

Source: Fehr & Peers, 2010

[1] *Average delay is calculated for signalized and all-way stop controlled intersections. Worst approach delay is calculated for side street stop controlled intersections.*

As shown in **Table 4.14-7**, a significant impact at City intersections occurs when project traffic causes additional delay at an intersection above a certain threshold. For University intersections, a significant impact occurs when the intersection operations degrade to LOS E or F, regardless of the amount of new project trips that travel through the intersection.

CMP Facilities

The latest CMP document defines an acceptable LOS threshold for CMP facilities at LOS E. For purposes of this analysis, an impact to a freeway segment occurs if either:

- The LOS on a freeway segment decreases from LOS E to LOS F with the addition of project traffic; or
- For a freeway segment that operates at LOS F prior to addition of project traffic, the V/C ratio increases by 0.01 or more as a result of the addition of project traffic

Alternative Modes

Transit impacts are considered significant if:

- A project or project-related mitigation disrupts existing transit services or facilities. This includes disruptions caused by proposed-project driveways on transit streets and impacts to transit stops/shelters and impacts to transit operations from traffic improvements proposed or resulting from a project.
- A project interferes with planned transit services or facilities.
- A project creates demand for public transit services above the capacity which is provided, or planned.

Pedestrian impacts are considered significant if:

- A project interferes with existing or planned pedestrian routes.

4.14.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of the following issue is not required in the EIR.

- 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;

The Initial Study determined that the proposed project would not affect the air traffic patterns at any of the regional airports. The project does not include activities or structures that could hinder aviation activity. This issue is not discussed further in this section.

4.11.4.3 Methodology

Trip Generation

School of Medicine

Estimating the trip generation for the proposed SOM required a specialized approach as this use is one which has not been studied extensively. Additionally, many medical schools operate in various ways with some schools co-located with large hospitals and other located separately from large health care facilities. The analysis therefore determined that the most appropriate method to evaluate trip generation would entail reviewing the travel characteristics of each activity associated with the proposed SOM, estimating travel behavior for that activity, and adding the trips from all activities. Activities that are anticipated to occur at the proposed SOM include:

- Medical Education/Administration
- Research
- Ambulatory Care
- Medical Offices

Based on information provided by UCR, the total number of persons at the proposed SOM at full occupancy and expected use would be 6,253, including:

- 400 students
- 150 faculty
- 150 principal investigators
- 838 staff engaged in Medical Education/Administration/Research
- 2,794 persons employed in the Medical Offices
- 719 persons supporting Ambulatory Care
- 1,202 patients and visitors

Next, the traffic analysis considered any potential overlap between the populations. The issue of overlap is a key one since the standard engineering reference manuals which document trip rates provide data for land uses in terms of one variable such as the number of students or employees. For example, the standard trip rates for an educational institution report the overall number of trips expressed in units such as number of students or number of employees. Both the per student trip rate and the per employee

trip rate includes all types of trips (students, employees, and visitors). For medical facilities, similar calculations are done in which the total trips associated with the site (staff, patients, and visitors) are expressed in common terms such as per employee or per square footage. Therefore, a key consideration in evaluating the project trips is the extent to which overlap may occur between categories and how best to account for any overlap.

To reduce the likelihood that the traffic analysis would include overlap of trips, the traffic analysis applied the following process:

- The traffic analysis first determined which activities would occur separately from each other and which would be combined. Assumptions for the activities are as follows:
  - The traffic analysis assumed that the students and medical educators/administration/researchers would overlap and therefore would estimate trip generation for these populations combined.
  - The traffic analysis assumed that the doctors, nurses, and other medical staff would be included in the activities associated with Ambulatory Care. The traffic analysis considered that it might be overly conservative to include both trips associated with the doctors and Ambulatory Care personnel separately.
  - The traffic analysis assumed that the patient/visitor travel would be included in any estimates for the Medical Offices and the Ambulatory Care offices. The trip rates for both of these uses include both staff and patient travel.

Remaining Development under the 2005 LRDP

Enrollment at UCR is anticipated to increase from its current level of approximately 20,750 students to 25,000 students with a commensurate increase in staff and faculty to support this increased enrollment. To estimate the traffic associated with this growth, the following process was applied:

- The number of incremental students was determined.
- The trip generation rate was taken from the 2005 LRDP EIR, which was based on traffic counts conducted by UCR at campus entrances. This rate was applied to the number of incremental students to estimate the non-SOM related new trips.
- The additional or incremental University traffic was distributed based on the likely travel patterns as identified by other previous studies such as the 2005 LRDP EIR.
- Trips from this UCR traffic were then assigned to the roadway network based on likely travel patterns and also the location of parking lots within the campus. It is anticipated that vehicular traffic will originate not from buildings but from parking lots and parking areas. This vehicular traffic was also assigned based on the relative proportion of each parking area to the overall total parking on the campus. Therefore, parking areas with more parking spaces were assigned a higher number of these vehicular trips.

Estimated Trips

Table 4.14-8, AM & PM Peak Hour Trip Rate, documents the final trip generation estimates for the SOM based on the estimated population and the assumptions listed above for the AM and PM peak hours. All trip rates were taken from the Institute of Transportation Engineers Trip Generation, 8th Edition, which is the most recent trip generation reference available.

Table 4.14-9, Mid-Day Peak Hour Trip Rate, provides the mid-day trip rates for each of the land uses. As ITE does not provide mid-day trip rates for many of these uses, the mid-day trip rates were estimated as follows:

- The traffic analysis averaged the AM and PM trip rates since it is common for many persons who travel to/from work locations to also leave during lunchtime.
- The overall trip rate was evenly split to yield the In and Out percentages since it is likely that everyone who would leave the site for lunch would also be reentering the site after lunch.

Table 4.14-10, AM & PM Peak Hour Trips, documents the trip generation for the AM & PM peak hours while **Table 4.14-11, Mid-Day Peak Hour Trips**, provides the trip generation for the mid-day peak hour.

Table 4.14-8
AM & PM Peak Hour Trip Rate

Land Use Category	ITE Code	Population	AM In	AM Out	AM Total	PM In	PM Out	PM Total
Students	550	400	0.17	0.04	0.21	0.06	0.14	0.21
Medical Doctors	N/A	150	Included in Trip Rate for Ambulatory Care					
Investigators	760	150	0.37	0.06	0.43	0.04	0..37	0.41
Medical Educators/ Administration/Researchers	N/A	838	Included in Trip Rate for Students					
Medical Office	720	2,794	0.42	0.11	0.53	0.36	0.70	1.06
Ambulatory Care	630	719	0.45	0.45	0.9	0.50	0.73	1.23
Patients/Visitors	N/A	1,202	Included in Trip Rate for Ambulatory Care					
Non-School of Medicine Students	N/A	3,854	0.065	0.015	0.08	0.014	0.054	0.068
Non-School of Medicine Faculty & Staff	N/A	2,532	0.384	0.106	0.490	0.287	0.430	0.717
Non-School of Medicine Other Individuals	N/A	788	Included in Trip Rate for Non-School of Medicine Faculty & Staff					

Source: Fehr & Peers, 2011

Table 4.14-9
Mid-Day Peak Hour Trip Rate

Land Use Category	ITE Code	Population	Mid-Day In	Mid-Day Out	Mid-Day Total
Students	550	400	0.105	0.105	0.21
Medical Doctors	N/A	150	Included in Trip Rate for Ambulatory Care		
Investigators	760	150	0.21	0.21	0.42
Medical Educators/ Administration/Researchers	N/A	838	Included in Trip Rate for Students		
Medical Office	720	2,794	0.375	0.375	0.75
Ambulatory Care	630	719	0.525	0.525	1.05
Patients/Visitors	N/A	1,202	Included in Trip Rate for Ambulatory Care		
Non-School of Medicine Students	550	3,854	0.026	0.026	0.05
Non-School of Medicine Faculty & Staff		2,532	0.209	0.209	0.42
Non-School of Medicine Other Individuals	N/A	788	Included in Trip Rate for Non-School of Medicine Students		

Source: Fehr & Peers, 2011

Table 4.14-10
AM & PM Peak Hour Trips

Land Use Category	ITE Code	Population	AM In	AM Out	AM Total	PM In	PM Out	PM Total
School of Medicine Students	550	400	67	17	84	25	59	84
Medical Doctors	N/A	150	Included in Trip Rate for Ambulatory Care					
Investigators	760	150	55	9	65	6	55	62
Medical Educators/ Administration/Researchers	N/A	838	Included in Trip Rate for Students					
Medical Office	720	2,794	1,170	311	1,481	1,007	1,955	2,962
Ambulatory Care	630	719	324	324	647	363	522	884
Patients/Visitors	N/A	1,202	Included in Trip Rate for Ambulatory Care					
Other Students (Non-School of Medicine)	550	3,854	251	58	309	54	208	262
Non-School of Medicine Faculty & Staff		2,532	972	268	1,240	727	1,089	1,816
Non-School of Medicine Other Individuals	N/A	788	Included in Trip Rate for Non-School of Medicine Students					
Totals	**N/A**	**16,026**	**2,839**	**987**	**3,826**	**2,182**	**3,888**	**6,070**

Source: Fehr & Peers, 2011

Table 4.14-11
Mid-Day Peak Hour Trips

Land Use Category	ITE Code	Population	Mid-Day In	Mid-Day Out	Mid-Day Total
Students	550	400	42	42	84
Medical Doctors	N/A	150	Included in Trip Rate for Ambulatory Care		
Investigators	760	150	84	84	168
Medical Educators/ Administration/Researchers	N/A	838	Included in Trip Rate for Students		
Medical Office	720	2,794	150	150	300
Ambulatory Care	630	719	210	210	420
Patients/Visitors	N/A	1,202	Included in Trip Rate for Ambulatory Care		
Other Students (Non-School of Medicine)	550	3,854	100	100	200
Non-School of Medicine Faculty & Staff	N/A	2,532	529	529	1,058
Non-School of Medicine Other Individuals	N/A	788	Included in Trip Rate for Non-School of Medicine Students		
Totals	**N/A**	**16,026**	**1,115**	**1,115**	**2,230**

Source: Fehr & Peers, 2011

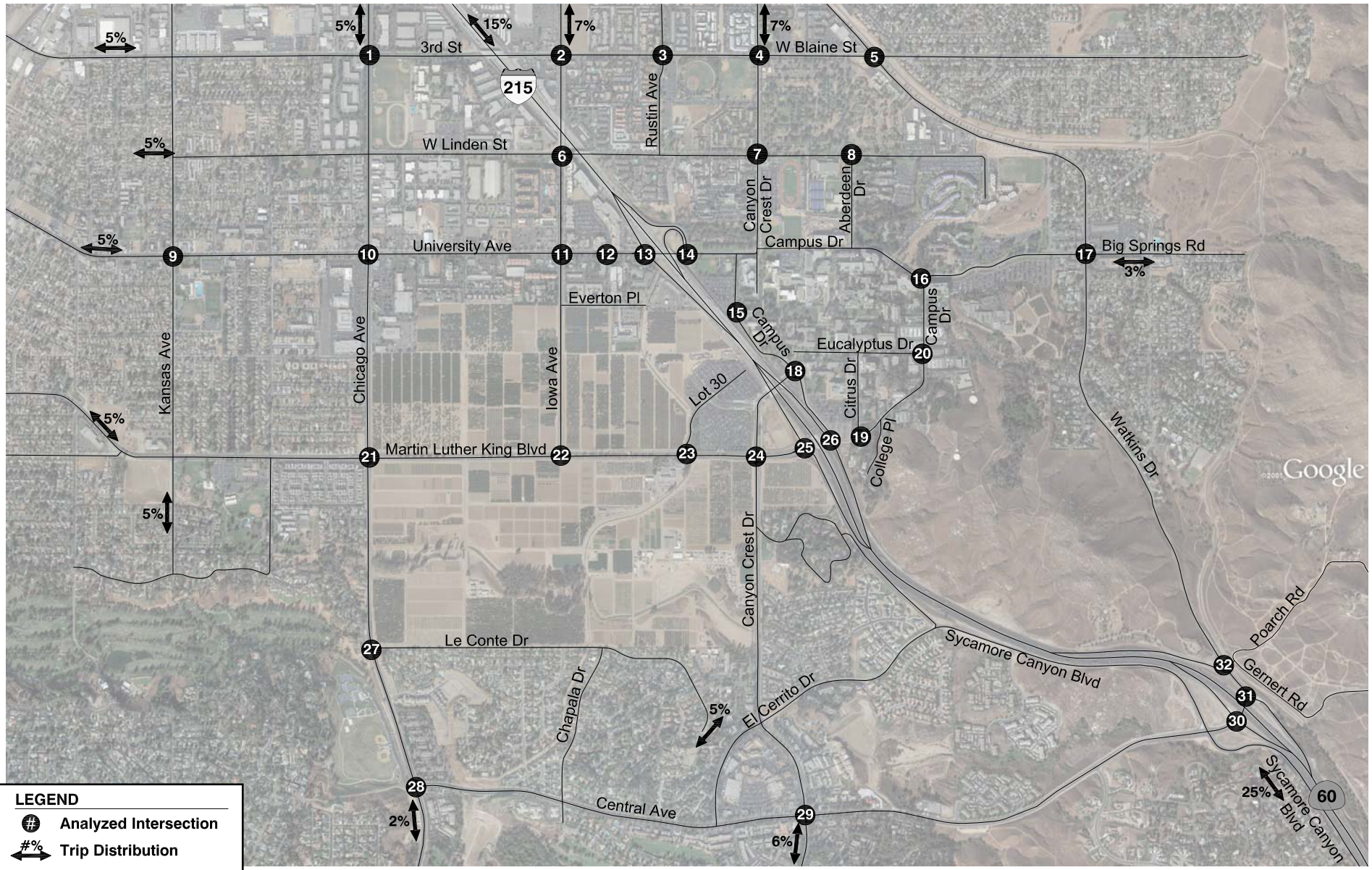
Trip Distribution

Trip distribution was estimated based on various sources, including data provided by the 2005 LRDP EIR and other more recent studies. The project trip distribution is shown on **Figure 4.14-4, Project Trip Distribution**.

Trip Assignment

The Project Trip Assignment is shown on **Figures 4.14-5a** through **5d** which provide the AM, mid-day, and PM peak hour trip assignment for each of the study intersections by individual turn movement.

A review of likely travel patterns to and from the *SOM* site indicate that there is at least one study intersection through which no SOM-related trips are anticipated to travel. This intersection (Watkins Drive/SR-60 NB On-Ramp) is included in the analysis that follows at the request of the City of Riverside but is not anticipated to carry any project traffic.

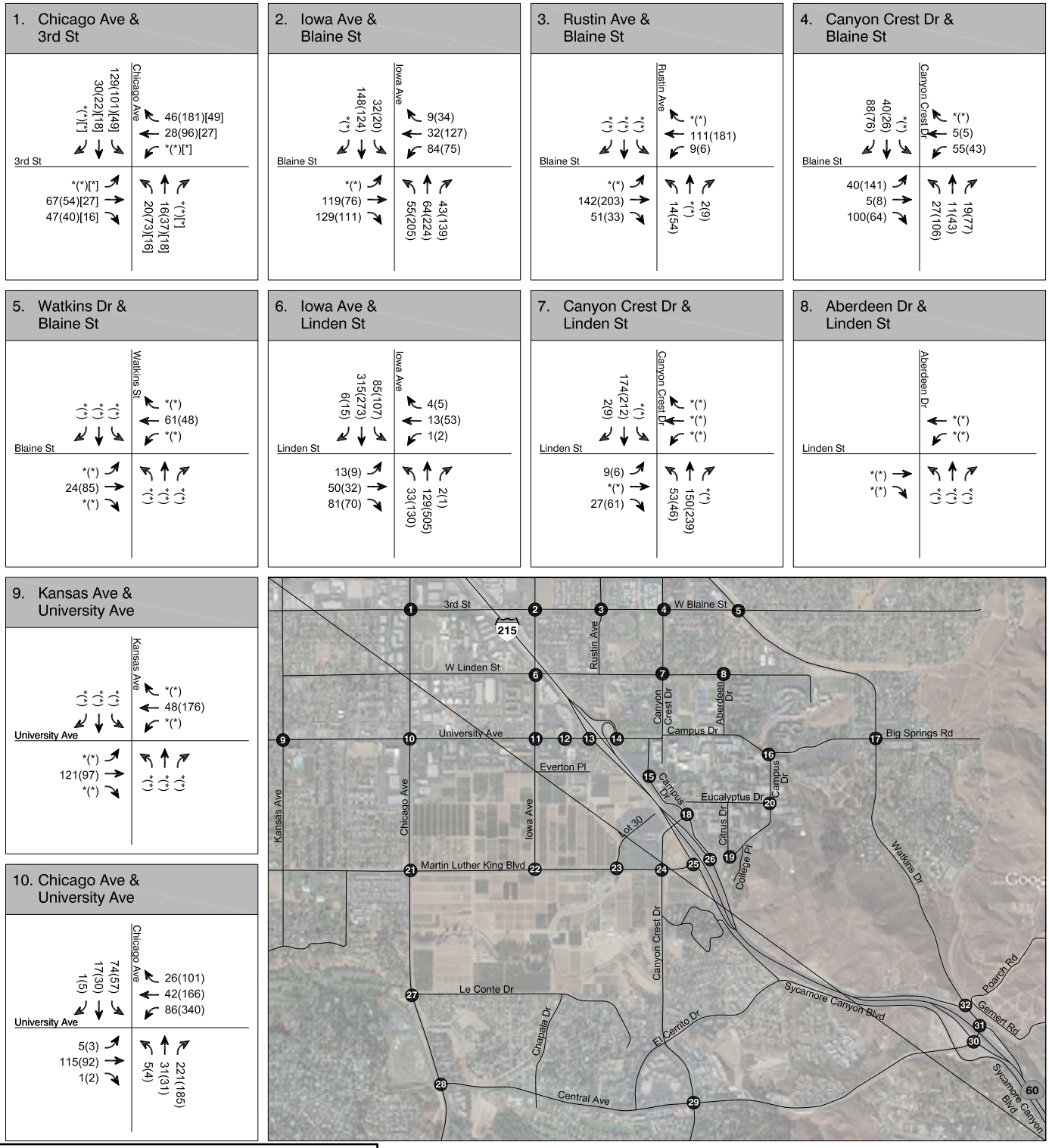


SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-4**

Project Trip Distribution

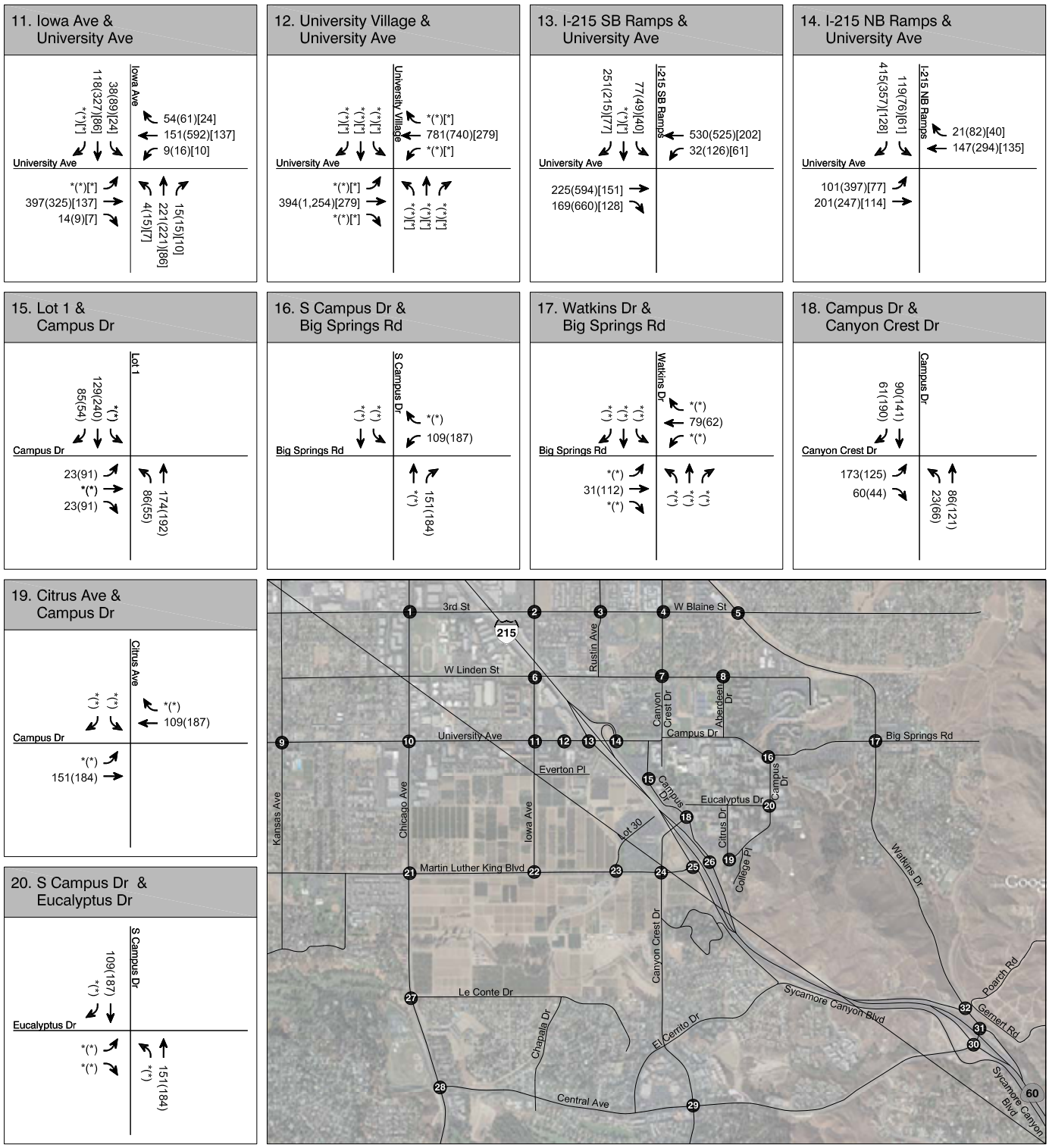
1031-001•01/11



SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-5a**

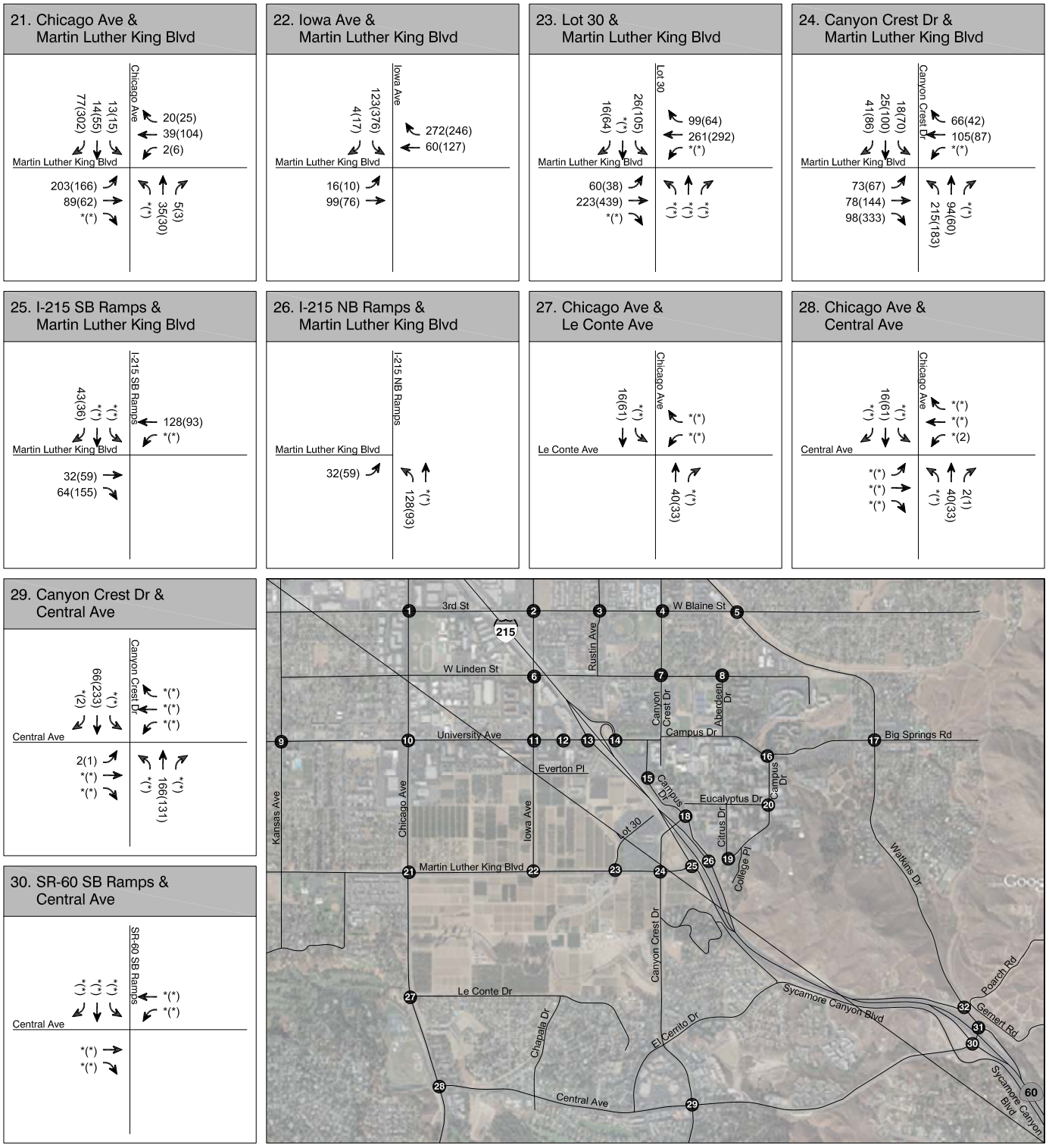
Project Only Conditions Peak Hour Traffic Volumes



SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-5b**

Project Only Conditions Peak Hour Traffic Volumes



LEGEND

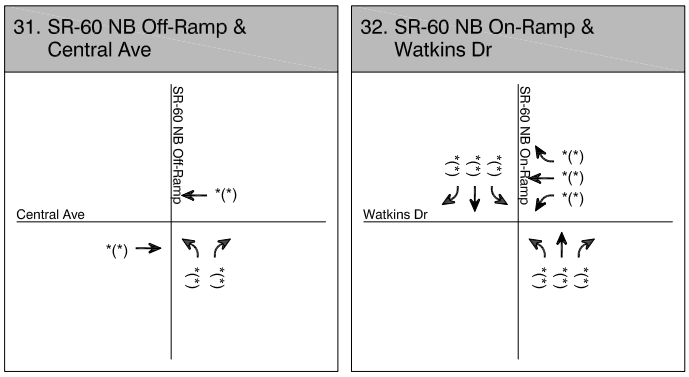
- ● **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

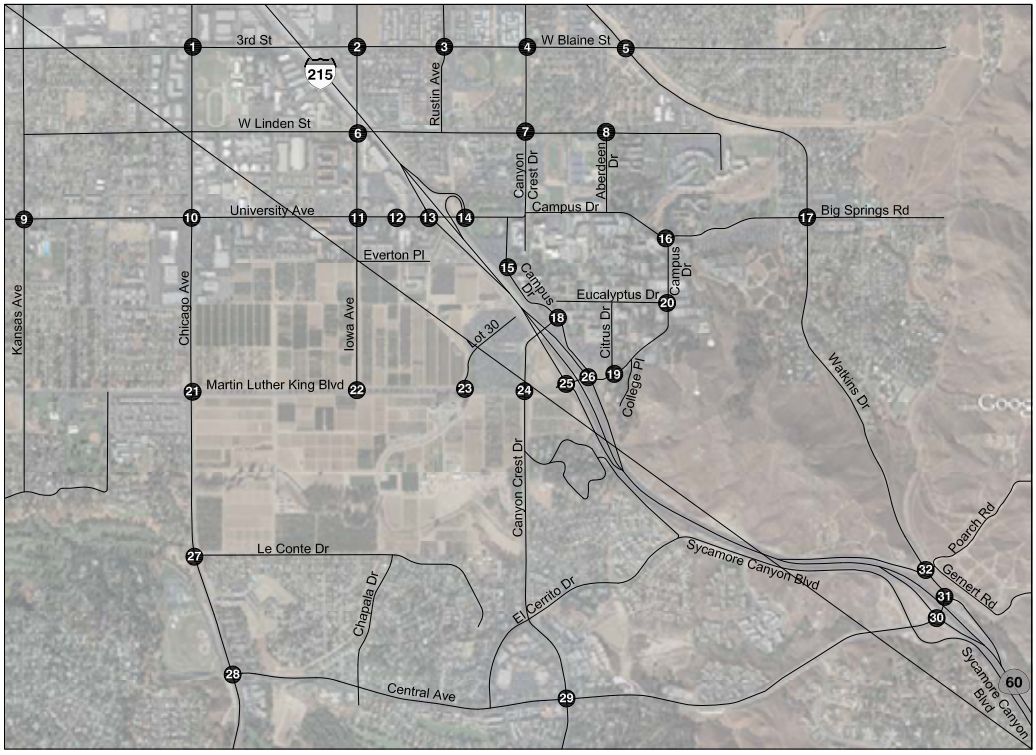
NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-5c**

Project Only Conditions Peak Hour Traffic Volumes





LEGEND

- ❶ **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-5d**

Project Only Conditions Peak Hour Traffic Volumes

4.14.4.4 Year 2020 No Project Conditions

Ambient Growth

One key issue related to the future traffic conditions within the study area is the likely ambient growth that would occur on land outside of UCR that might travel through one or more of the study intersections. This ambient growth could include:

- Increase in through traffic traveling on major roadways such as University Avenue
- Increased activity at any existing non-UCR land uses
- Redevelopment of any non-UCR land use parcels
- Development on any currently vacant parcels

To determine the appropriate increase in traffic, several sources were consulted, including the 2005 LRDP, the Riverside County Travel Demand Model (RivTAM), and the City of Riverside General Plan. After reviewing the various sources and consulting with City of Riverside staff, it was determined that the most appropriate tool to use to estimate the amount of future non-UCR growth in the study area would be the City of Riverside General Plan.

However, it was determined that the volumes from the City of Riverside General Plan could not be directly extracted as the General Plan had a horizon year of 2025 and the proposed 2005 LRDP Amendment 2 extends only to 2020. As such, a yearly growth rate based on the increase in traffic as noted by the General Plan was calculated and applied out to 2020. The yearly growth rate was calculated to be 1.5 percent per year, which yielded an overall growth of approximately 16 percent. This was applied to the intersections throughout the study area.

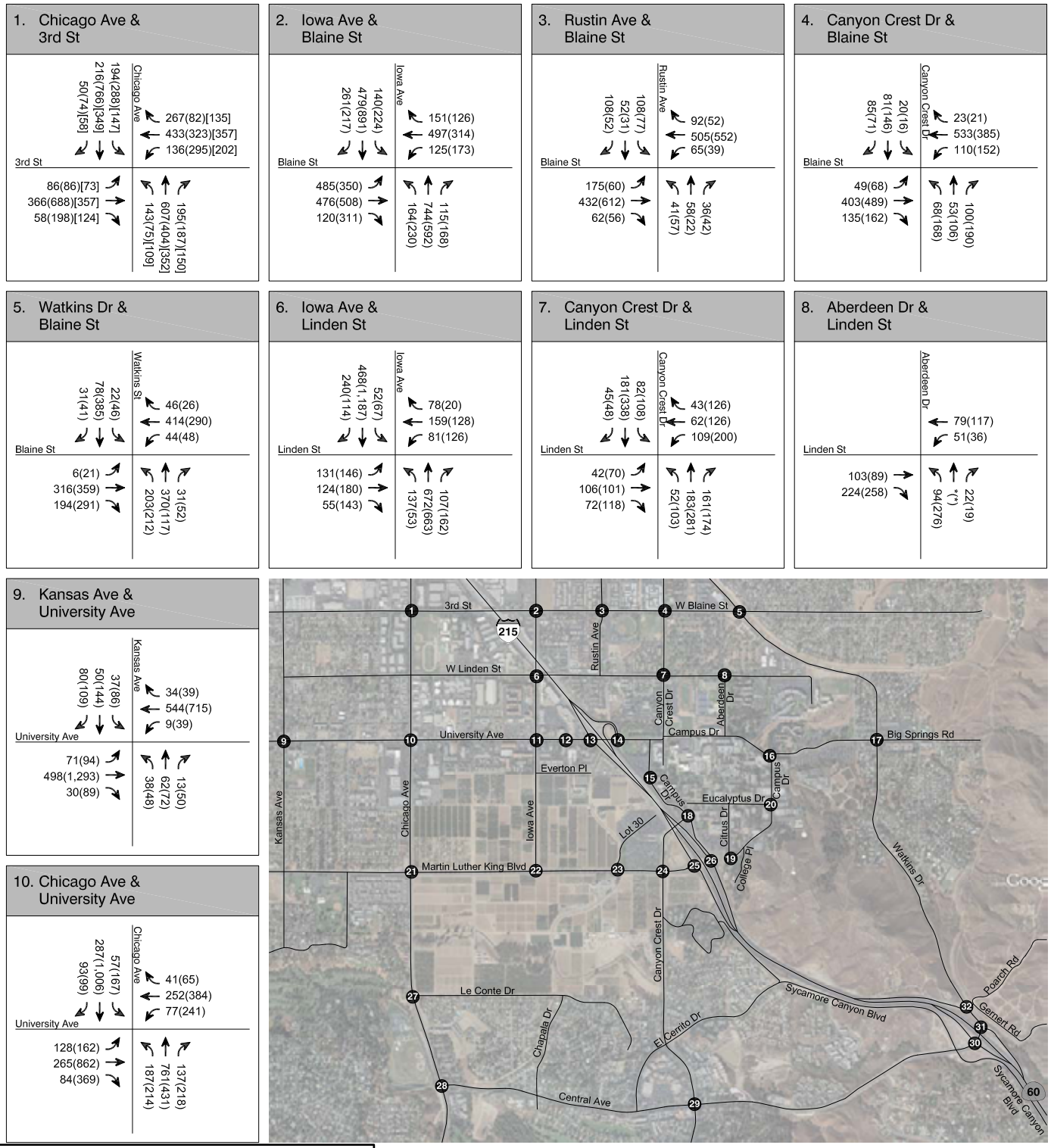
Traffic Volumes

No project traffic volumes for 2020 conditions are provided on **Figures 4.14-6a** and **6d**.

Intersection Operations

Table 4.14-12, Intersection Levels of Service – 2020 No Project AM and PM Peak Hour, documents the Cumulative No Project LOS and Delay for the AM and PM peak hours. As indicated in **Table 4.14-12**, most of the intersections would operate at an acceptable Level of Service of D or better during the AM and PM peak periods. The following 12 intersections would operate at a deficient Level of Service during one or more peak period:

- Third Street/Chicago Avenue (AM & PM peak hour)
- Blaine Street/Iowa Avenue (AM peak hour)
- Blaine Street/Rustin Avenue (AM peak hour)
- University Avenue/Chicago Avenue (PM peak hour)
- Parking Lot 1/Campus Drive (PM peak hour)
- MLK/Chicago Avenue (AM & PM peak hour)
- MLK/Iowa Avenue (PM peak hour)
- MLK/Lot 30 (PM peak hour)
- MLK/Canyon Crest Drive (PM peak hour)
- Central Avenue/Chicago Avenue (AM peak hour)
- Central Avenue/ Canyon Crest Drive (PM peak hour)
- Watkins Drive/SR-60 NB On Ramp (AM peak hour)



LEGEND

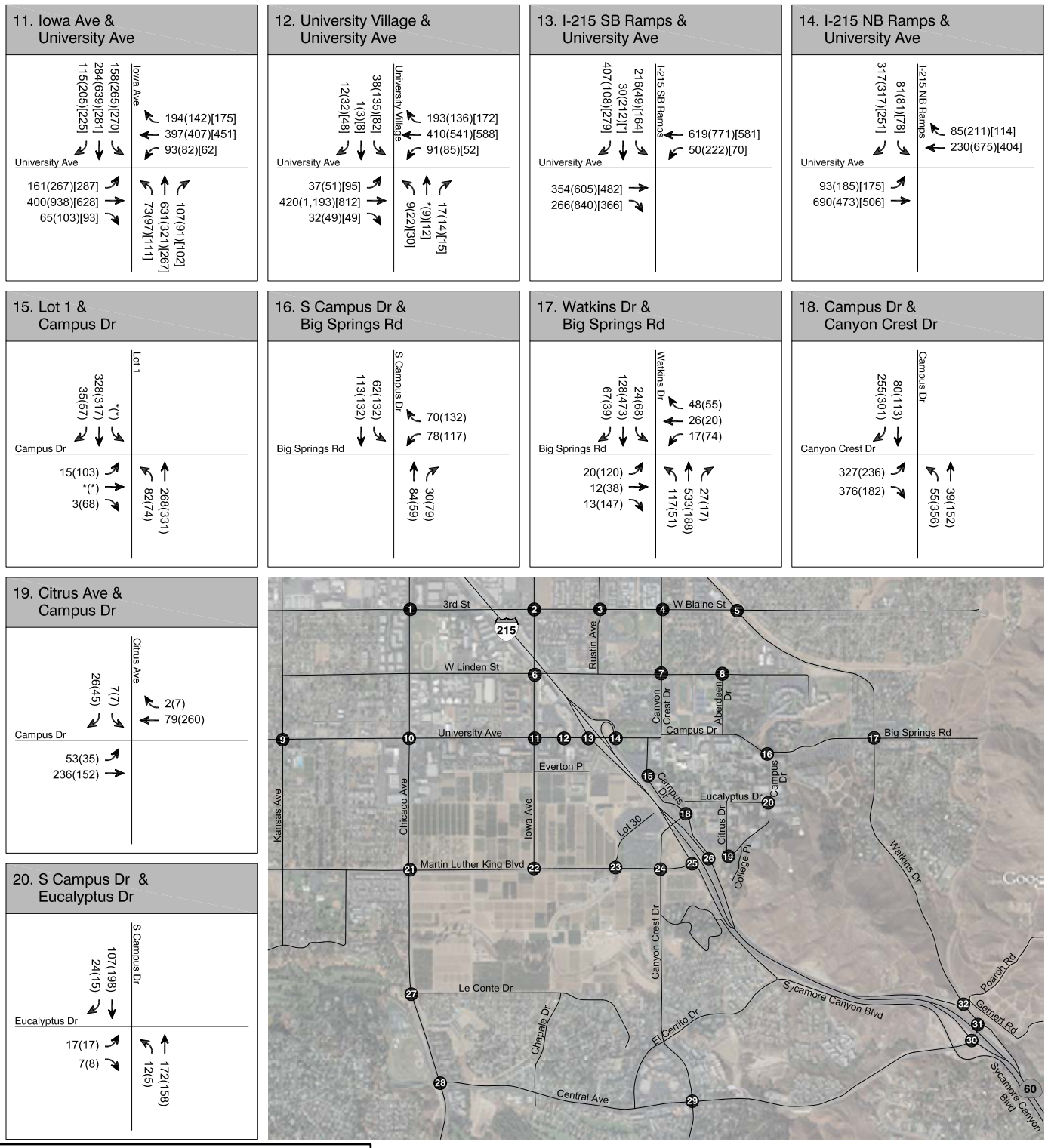
- (#) **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-6a**

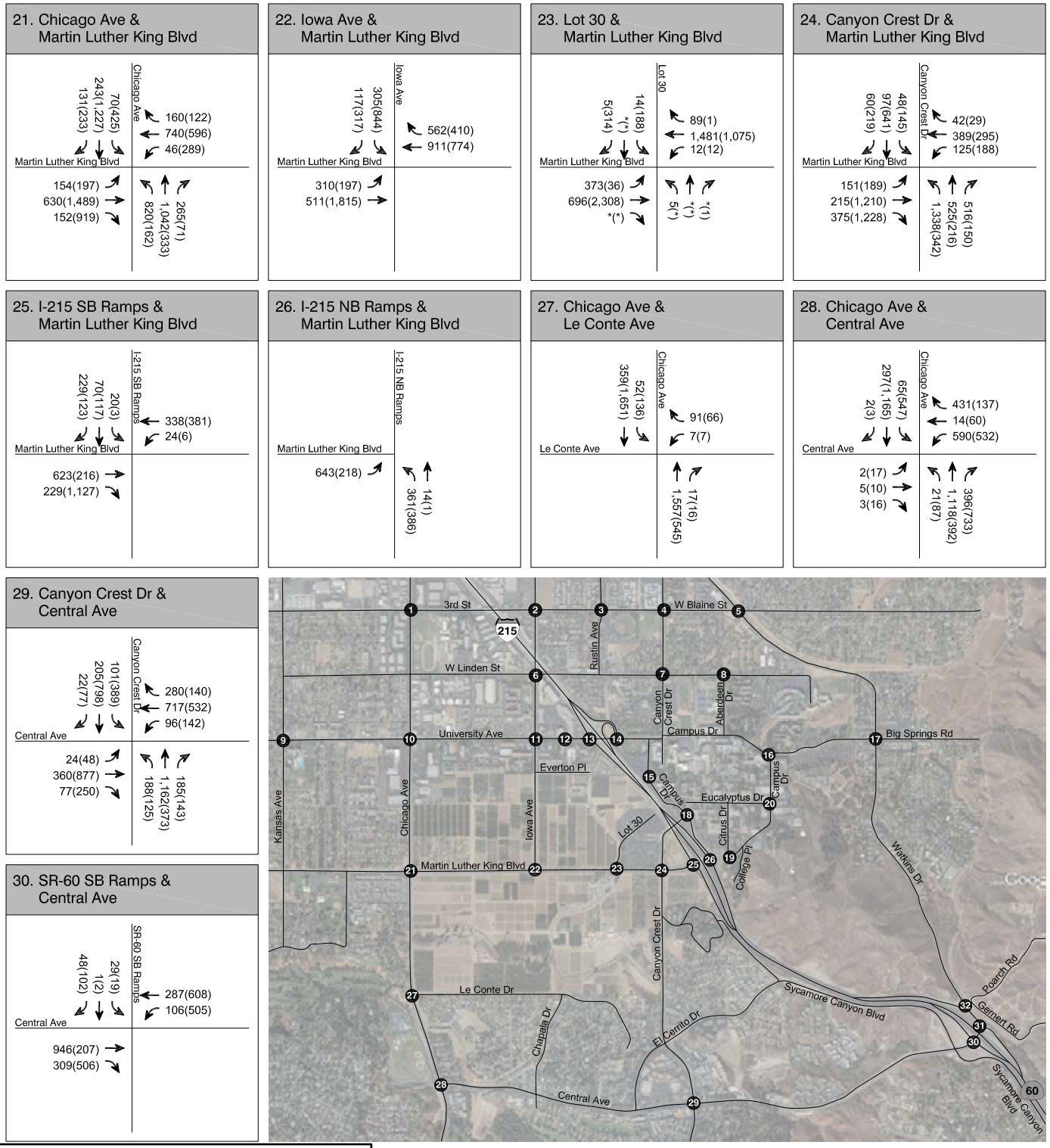
Year 2020 Peak Hour Traffic Volumes



SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-6b**

Year 2020 Peak Hour Traffic Volumes



LEGEND

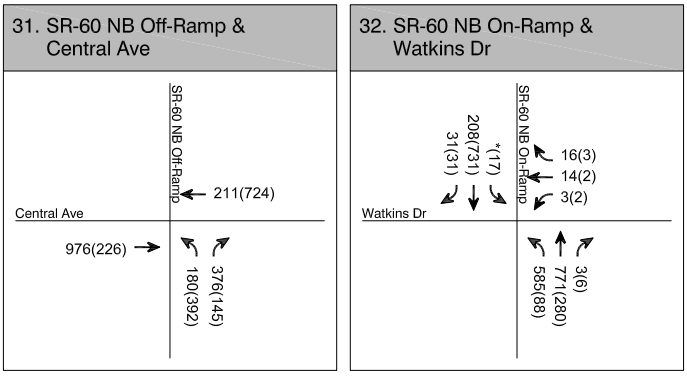
- # **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

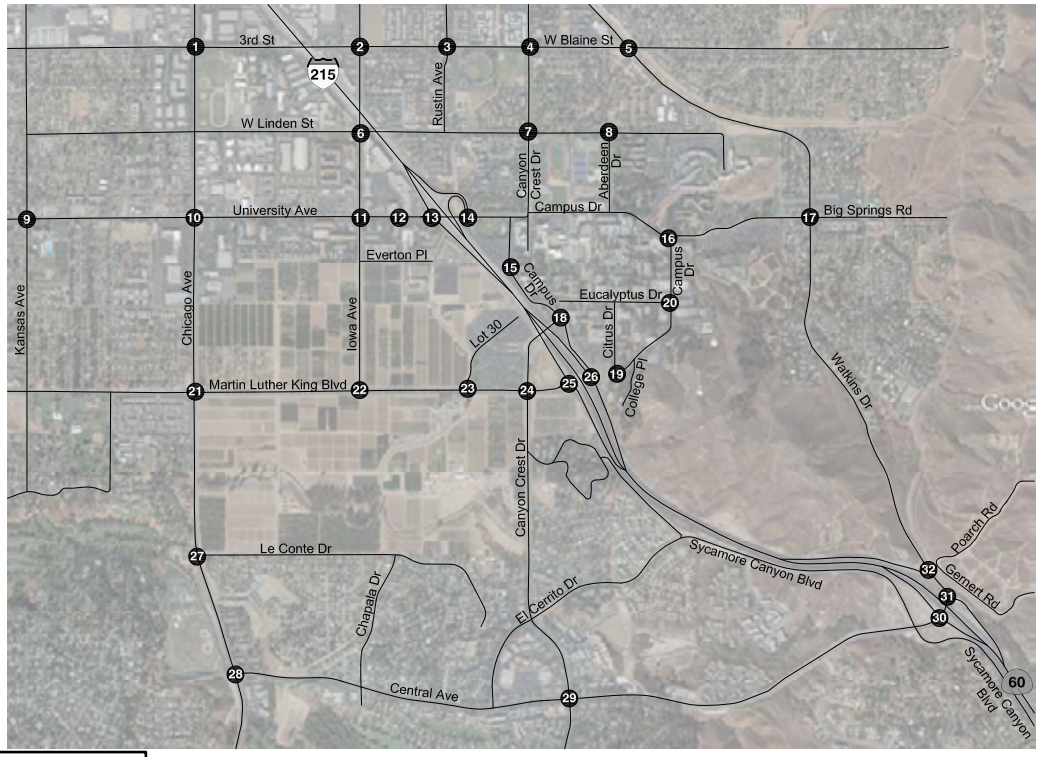
NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-6c**

Year 2020 Peak Hour Traffic Volumes





LEGEND

- (#) **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-6d**

Year 2020 Peak Hour Traffic Volumes

Table 4.14-12
Intersection Levels of Service – 2020 No Project AM and PM Peak Hour

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS
Third Street/Chicago Avenue	Signalized	**>80**	**F**	**72.6**	**E**
Blaine Street/Iowa Avenue	Signalized	**67.4**	**E**	46.5	D
Blaine Street/Rustin Avenue	Signalized	**>80**	**F**	22.4	C
Blaine Street/Canyon Crest Drive	Signalized	20.3	C	23.8	C
Blaine Street/Watkins Drive	Signalized	28.4	C	34.5	C
Linden Street/Iowa Avenue	Signalized	29.5	C	76.3	E
Linden Street/Canyon Crest Drive	Signalized	24.5	C	30.7	C
Linden Street/Aberdeen Drive	AWSC	9.5	A	12.7	B
University Avenue/Kansas Avenue	Signalized	15.8	B	47.0	D
University Avenue/Chicago Avenue	Signalized	34.2	C	**64.0**	**E**
University Avenue/Iowa Avenue	Signalized	33.7	C	44.0	D
University Avenue/University Village	Signalized	13.8	B	18.4	B
University Avenue/I-215 SB Ramps	Signalized	19.4	B	18.7	B
University Avenue/I-215 NB Ramps	Signalized	18.6	B	23.1	C
Parking Lot 1/Campus Drive	AWSC	12.2	B	**>80**	**F**
Big Springs Rd/Campus Drive	AWSC	9.1	A	10.3	B
Big Springs Road/Watkins Drive	AWSC	24.2	C	23.0	C
Canyon Crest Drive/Campus Drive	Signalized	9.7	A	12.0	B
Citrus Drive/Campus Drive	SSSC	9.8	A	11.6	B
Eucalyptus Drive/Campus Drive	SSSC	10.9	B	11.8	B
MLK/Chicago Avenue	Signalized	**66.0**	**E**	**>80**	**F**
MLK/Iowa Avenue	Signalized	26.3	C	**62.7**	**E**
MLK/Lot 30	Signalized	30.4	C	**46.4**	**D**
MLK/Canyon Crest Drive	Signalized	**>80**	**F**	**>80**	**F**
MLK/I-215 SB Ramps	Signalized	18.4	B	21.8	C
MLK/I-215 NB Ramps	AWSC	15.7	C	10.7	B
Le Conte Drive/Chicago Avenue	SSSC	31.1	D	17.0	C
Central Avenue/Chicago Avenue	Signalized	**>80**	**F**	34.4	C
Central Avenue/Canyon Crest Drive	Signalized	40.5	D	**61.7**	**E**
Central Avenue/SR-60 SB Ramps	Signalized	18.0	B	17.0	B
Central Avenue/SR-60 NB Off Ramp	Signalized	20.8	C	17.2	B
Watkins Drive/SR-60 NB On Ramp	SSSC	**>50**	**F**	26.5	D

Source: Fehr & Peers, 2010

[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*

As shown in **Table 4.14-13, Intersection Levels of Service – 2020 Mid-Day Peak Hour**, all of the intersections would operate at an acceptable Level of Service of D or better during the mid-day peak period.

Table 4.14-13
Intersection Levels of Service – 2020 No Project Mid-Day Peak Hour

Intersection	Control	Mid-Day Peak Hour Delay[1]	Mid-Day Peak Hour LOS
Third Street/Chicago Avenue	Signalized	35.3	D
University Avenue/Iowa Avenue	Signalized	41.8	D
University Avenue/University Village	Signalized	16.8	B
University Avenue/I-215 SB Ramps	Signalized	17.3	B
University Avenue/I-215 NB Ramps	Signalized	19.8	B

Source: Fehr & Peers, 2010

[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*

Roadway Segment Operations

As shown in **Table 4.14-14, 2020 No Project Roadway Segment Volumes and Operations**, all study area roadway segments operate at LOS D or better under 2020 No Project Conditions.

Table 4.14-14
2020 No Project Roadway Segment Volumes and Operations

Roadway	Classification	LOS D Volume	Existing Volume	LOS
MLK/14th Street				
Canyon Crest Drive to Iowa Avenue	110 ft. Arterial (4 lanes)	33,000	25,891	D or better
Iowa Avenue to Chicago Avenue	110 ft. Arterial (4 lanes)	33,000	23,294	D or better
Chicago Avenue				
MLK to University Avenue	110 ft. Arterial (4 lanes)	33,000	20,494	D or better
University Avenue to Blaine Street	110 ft. Arterial (4 lanes)	33,000	19,376	D or better
University Avenue				
I-215 to Iowa Avenue	110 ft. Arterial (4 lanes)	33,000	23,790	D or better
Iowa Avenue to Chicago Avenue	110 ft. Arterial (4 lanes)	33,000	23,382	D or better
Iowa Avenue				
MLK to University Avenue	110 ft. Arterial (4 lanes)	33,000	13,929	D or better
University Avenue to Blaine Street	110 ft. Arterial (4 lanes)	33,000	21,772	D or better

Source: Fehr & Peers, 2010

[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*

Freeway Segment Operations

Table 4.14-15, Freeway Levels of Service – 2020 No Project AM and PM Peak Hour, presents the Year 2020 No Project LOS for the AM and PM peak hours. As indicated in **Table 4.14-15**, most of the freeway segments would operate at an acceptable Level of Service of E or better during the AM and PM peak periods. The following seven segments would operate at a deficient Level of Service during one or both peak periods under 2020 No Project conditions:

- I-215 Northbound, between SR-60 and Central Avenue (AM & PM)
- I-215 Northbound, between Central Avenue and MLK (AM)
- I-215 Southbound, between Central Avenue and MLK (PM)
- I-215 Northbound, between MLK and University Avenue (PM)
- I-215 Southbound, between MLK and University Avenue (AM)
- I-215 Northbound, between University and 3rd Street (AM)
- 60 Eastbound, east of I-215 (PM)

Table 4.14-15
Freeway Levels of Service – 2020 No Project AM and PM Peak Hour

Freeway Segment	Peak Hour	Volume	LOS	V/C
I-215 NB, s/o 60	AM	8,200	D	0.91
	PM	7,701	D	0.86
I-215 SB, s/o 60	AM	6,840	D	0.91
	PM	6,871	D	0.92
I-215 NB, b/w 60 & Central	AM	8,652	F(0)	1.15
	PM	7,688	F(0)	1.03
I-215 SB, b/w 60 & Central	AM	4,180	A	0.35
	PM	8,370	C	0.70
I-215 NB, b/w Central & MLK	AM	9,697	F(0)	1.08
	PM	8,064	D	0.90
I-215 SB, b/w Central & MLK	AM	5,457	C	0.57
	PM	9,752	F(0)	1.03
I-215 NB, b/w MLK & University	AM	8,277	F(0)	1.10
	PM	6,869	D	0.92
I-215 SB, b/w MLK & University	AM	6,707	C	0.71
	PM	12,379	F(1)	1.30
I-215 NB, b/w University & 3rd	AM	9,138	F(0)	1.02
	PM	7,117	D	0.79
I-215 SB, b/w University & 3rd	AM	4,715	C	0.63
	PM	6,986	E	0.93

Freeway Segment	Peak Hour	Volume	LOS	V/C
I-215 NB, b/w 3rd & Spruce	AM	9,261	D	0.84
	PM	6,724	C	0.61
I-215 SB, b/w 3rd & Spruce	AM	5,377	C	0.72
	PM	7,411	E	0.99
I-215 NB, n/o 91/60	AM	6,972	D	0.87
	PM	5,887	C	0.74
I-215 SB, n/o 91/60	AM	6,496	D	0.81
	PM	6,075	C	0.76
60 EB, e/o 215	AM	5,377	C	0.72
	PM	7,643	F(0)	1.02
60 WB, e/o 215	AM	8,569	D	0.78
	PM	7,591	C	0.69
60 EB, w/o 91/215	AM	6,496	D	0.87
	PM	6,075	D	0.81
60 WB, w/o 91/215	AM	6,972	D	0.87
	PM	5,887	C	0.74
91 EB, w/o 215/60	AM	6,018	D	0.80
	PM	4,908	C	0.65
91 WB, w/o 215/60	AM	7,756	D	0.82
	PM	7,207	C	0.76

Source: Fehr & Peers, 2010

4.14.4.5 Project Impacts and Mitigation Measures

Impact 4.14-1 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service under 2020 conditions. The impact would be significant.**

The addition of about 3.1 million gsf of building space associated with the proposed SOM would result in additional vehicular traffic on and around the campus that was not previously considered in the 2005 LRDP EIR. The relocation of the two parking garages, the reconfiguration of West Campus open space, and the *housing* and *open space* now designated on the Campus Reserve site represent land uses that were previously considered under the 2005 LRDP and would not generate increased traffic. However, the development of student housing on the Campus Reserve site could result in increased traffic near that site. The remaining elements of the proposed 2005 LRDP Amendment 2 are programmatic in nature and would not generate increased traffic.

During the planning horizon of the amended 2005 LRDP, future development of the campus would be guided as applicable by a range of LRDP Planning Strategies and are assumed as part of the proposed project. The following LRDP Planning Strategies (PS) are relevant to traffic and transportation.

PS Land Use 4 Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing.

PS Land Use 7 Over time, relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate.

PS Transportation 1 Develop an integrated multi-modal transportation plan to encourage walking, biking and transit use.

PS Transportation 2 Expand shuttle or tram service connecting major parking lots and campus destinations, and linking the East and West Campuses. Coordinate this system with RTA routes and schedules.

PS Transportation 3 Provide a continuous network of bicycle lanes and paths throughout the campus, connecting to off-campus bicycle routes.

PS Transportation 4 Over time, limit general vehicular circulation in the central campus, but allow transit, service and emergency vehicle access, and provide access for persons with mobility impairments.

PS Transportation 5 Provide bicycle parking at convenient locations.

PS Transportation 6 Implement parking management measures that may include

- Restricted permit availability
- Restricted permit mobility
- Differential permit pricing

In addition, continued implementation as applicable of the following existing campus Program and Practice (PP) would reduce campus trip generation and is assumed as part of the proposed project:

PP 4.14-1 The Campus shall continue to implement a Transportation Demand Management program that meets or exceeds all trip reduction and AVR requirements of the SCAQMD. The TDM program may be subject to modification as new technologies are developed or alternate program elements are found to be more effective.

(This is identical to Air Quality PP 4.3-1.)

The traffic analysis for the proposed project conducted an analysis of future levels of service at the study intersections that would result from the full implementation of the 2005 LRDP Amendment 2. The

proposed SOM would increase campus trips by approximately 3,826 during the AM peak hour and 6,070 during the PM peak hour, as shown in **Table 4.14-10**. In addition, the proposed SOM would increase campus trips by approximately 2,230 during the mid-day peak hour, as shown in **Table 4.14-11**. The rest of the development on the campus under the 2005 LRDP would result in approximately 1,168 vehicle trips during the AM, PM, and mid-day peak hours, as shown in **Table 4.14-10** and **Table 4.14-11**.

The increase in the number of campus-related peak hour trips would increase traffic volumes on the local street network, thus degrading traffic conditions at some intersections. The Year 2020 Plus Project traffic volumes are shown on **Figures 4.14-7a** through **7d**. **Table 4.14-16, Intersection Levels of Service – 2020 Plus Project AM and PM Peak Hour,** presents the intersection level of service for the AM and PM peak hour and also reports the increase in delay which would occur during the peak hours.

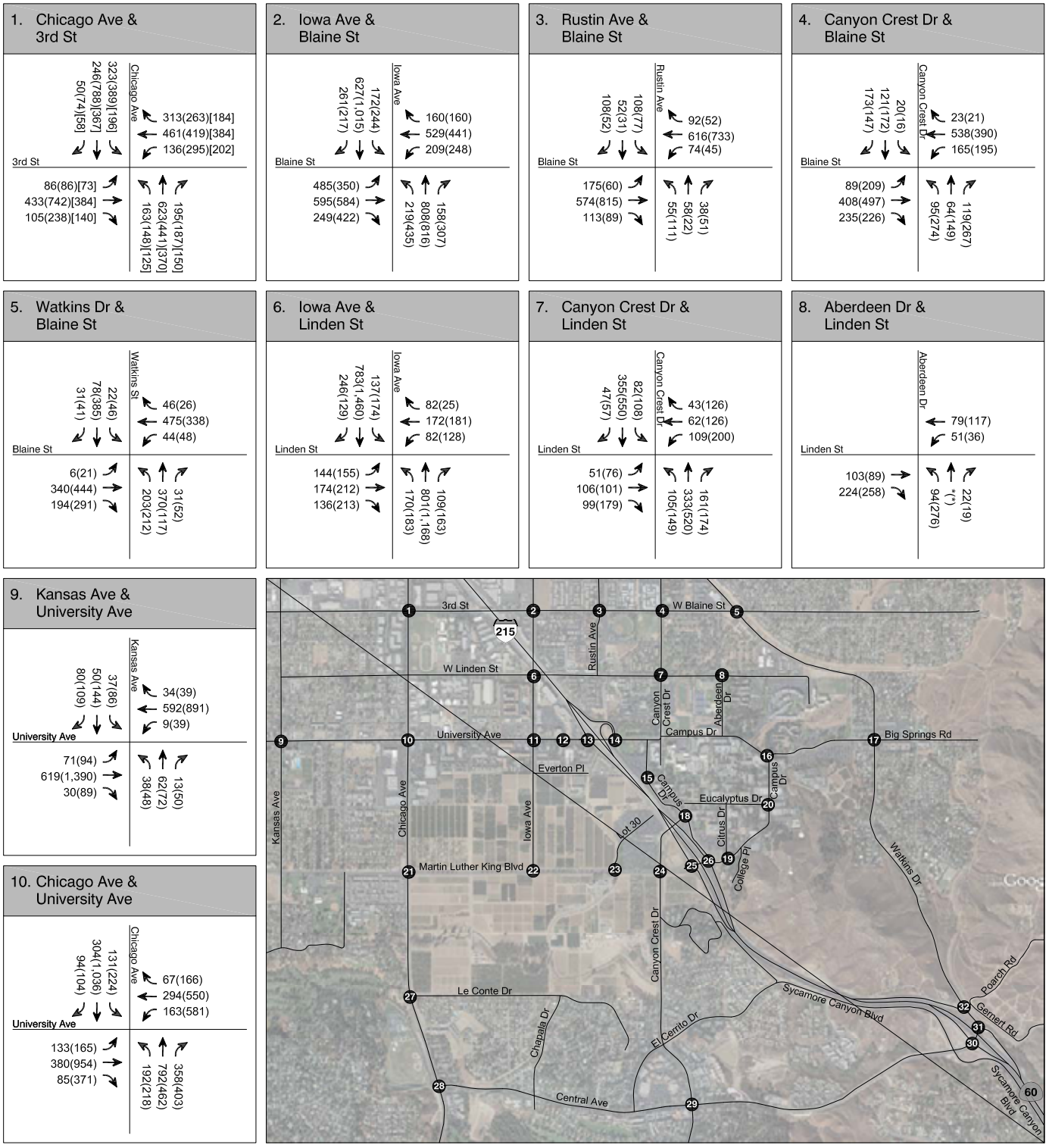
Table 4.14-17, Intersection Levels of Service – 2020 Plus Project Mid-Day Peak Hour reports the Existing Plus Project results for the mid-day peak hour.

A total of 18 study intersections that would be significantly affected by the project traffic under 2020 plus project conditions are discussed in further detail below. The intersections are sorted between those that are within the jurisdiction of the University and therefore mitigation of a significant impact at the location is within the control of the University, and those intersections that are within the City and/or Caltrans jurisdiction and therefore mitigation of a significant impact at these locations is not within the control of the University.

Intersection within University Jurisdiction

Parking Lot 1/Campus Drive

This intersection would operate at LOS B during the AM peak hour and LOS F during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS E in the AM peak hour and LOS F in the PM peak hour. As this intersection is considered to be within the boundary of the campus, any increase in traffic at an LOS F intersection is considered to be a significant impact. **Mitigation Measure 4.14-1a** is proposed below. With the implementation of this mitigation measure, the intersection would operate at LOS C during the PM peak hour. The impact would be reduced to a less than significant level.



LEGEND

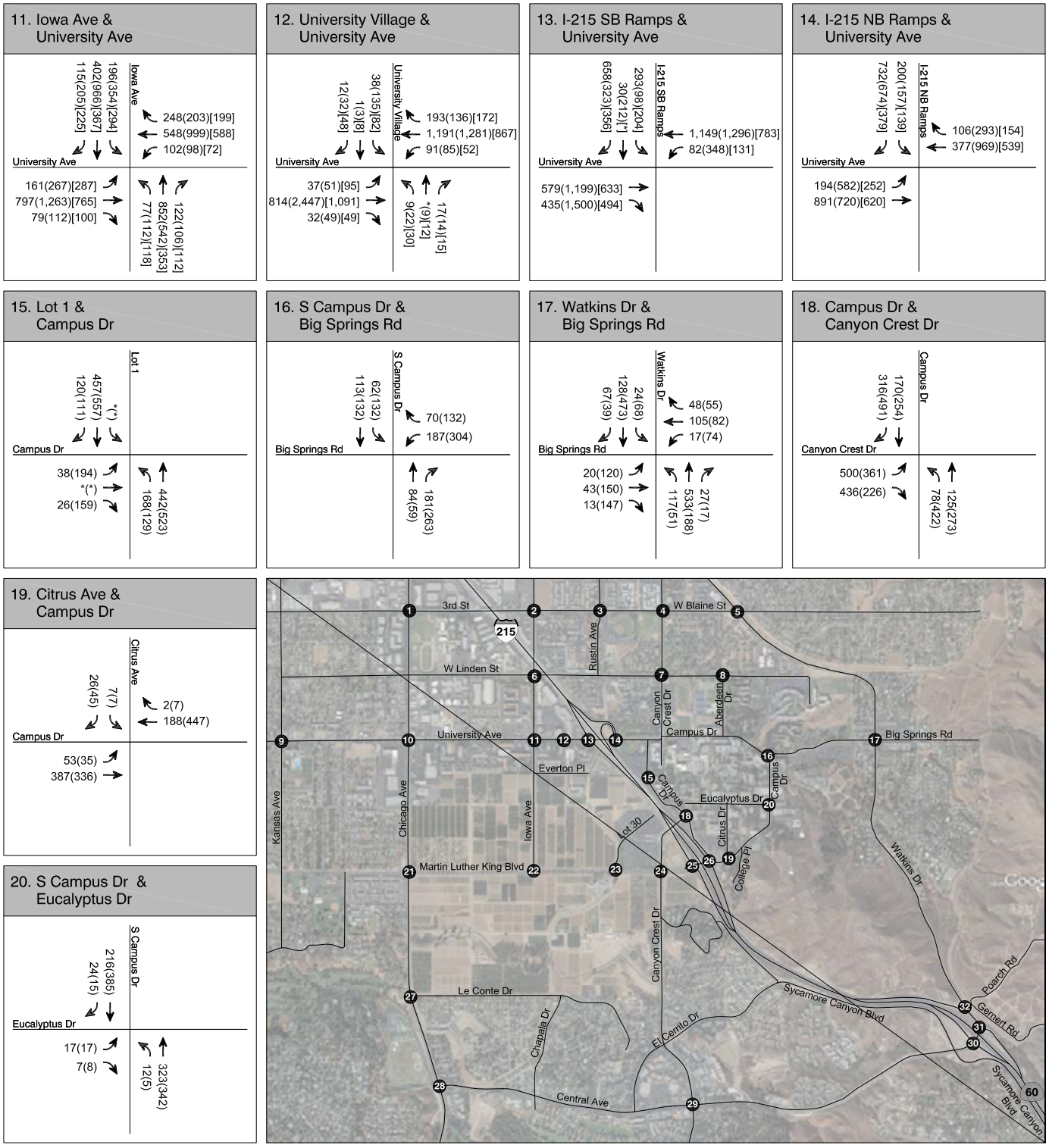
- (#) **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-7a**

Year 2020 Plus Project Peak Hour Traffic Volumes



LEGEND

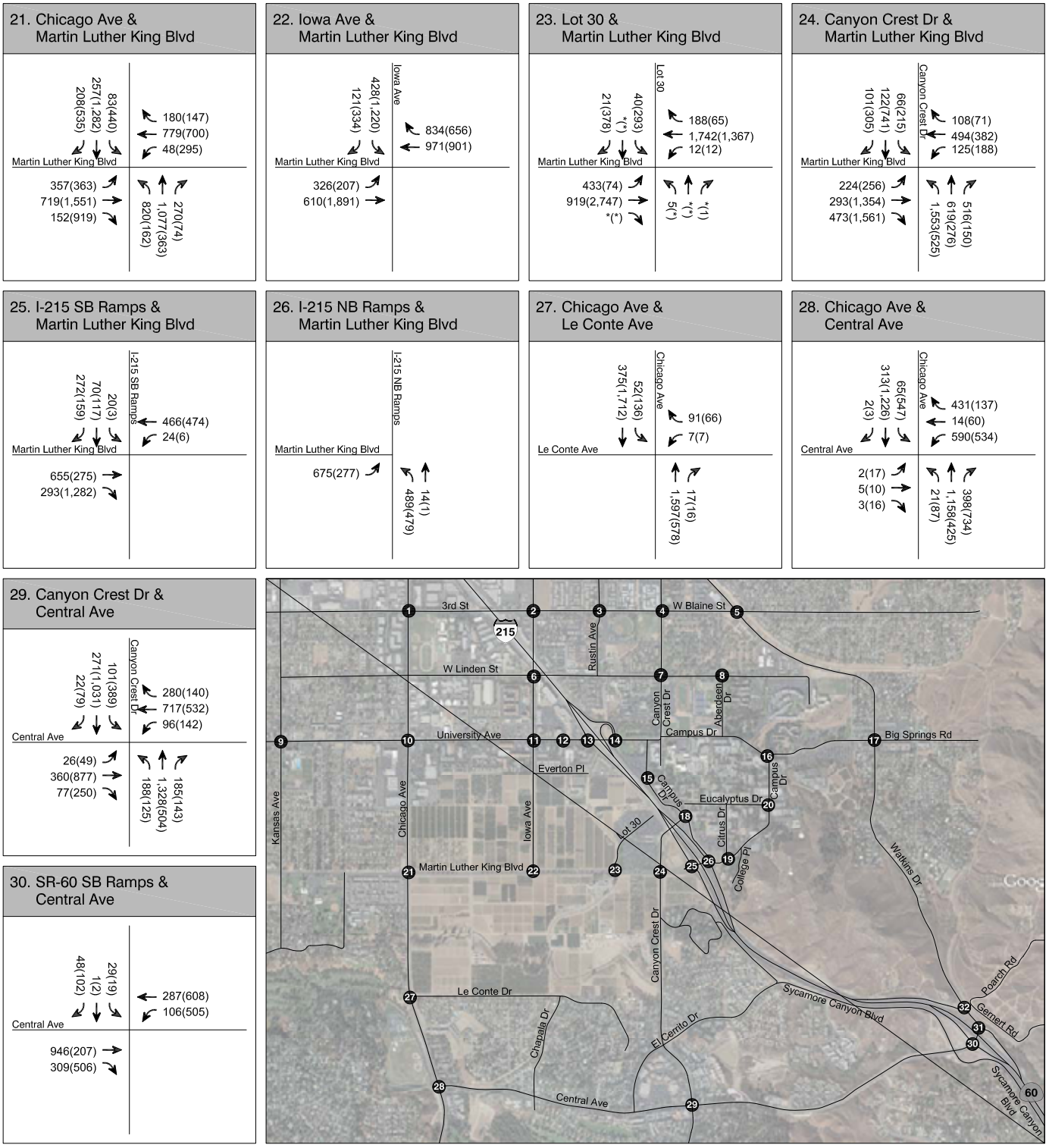
- (#) **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-7b**

Year 2020 Plus Project Peak Hour Traffic Volumes



LEGEND

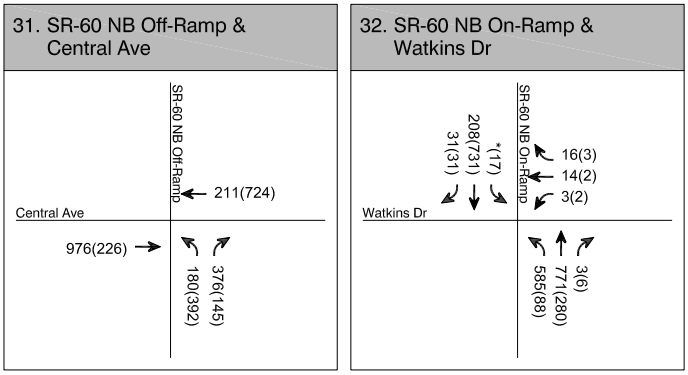
- ❶ **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

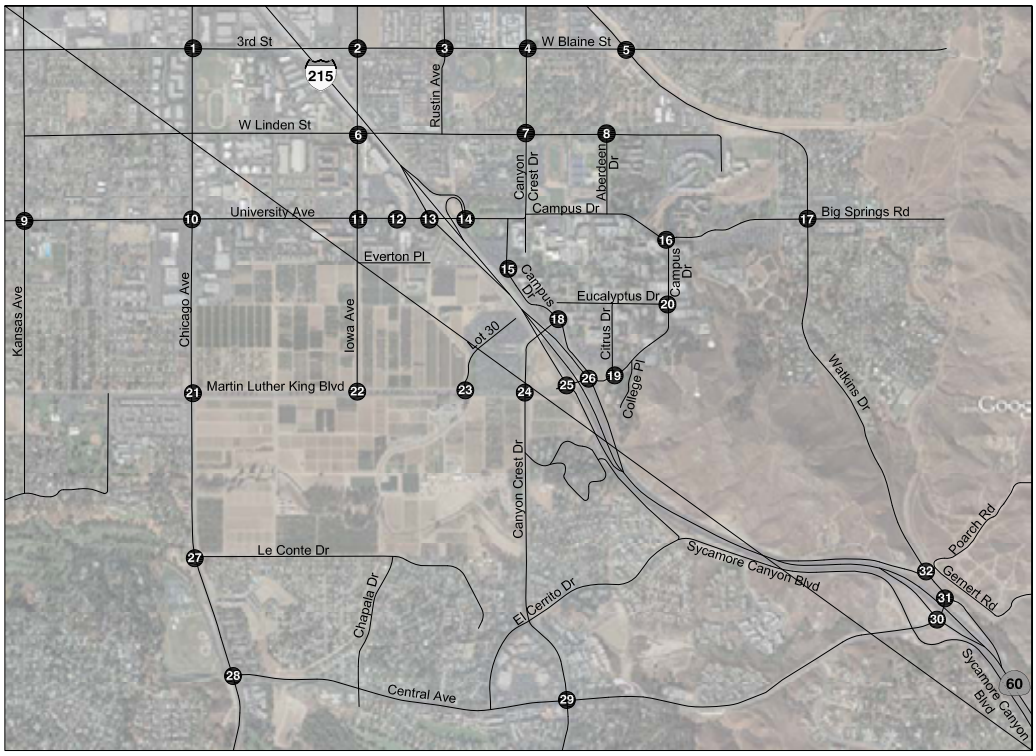
NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-7c**

Year 2020 Plus Project Peak Hour Traffic Volumes





LEGEND

- ❶ **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-7d**

Year 2020 Plus Project Peak Hour Traffic Volumes

Table 4.14-16
Intersection Levels of Service – 2020 Plus Project AM and PM Peak Hour

		AM Peak Hour			PM Peak Hour		
Intersection	Control	Delay[1]	LOS	Change in Delay	Delay[1]	LOS	Change in Delay
Third Street/Chicago Avenue	Signalized	**>80**	**F**	**>1**	**>80**	**F**	**>1**
Blaine Street/Iowa Avenue	Signalized	**>80**	**F**	**>1**	**>80**	**F**	**>1**
Blaine Street/Rustin Avenue	Signalized	**>80**	**F**	**<1**	23.4	**C**	1.0
Blaine Street/Canyon Crest Drive	Signalized	22.9	C	2.6	31.7	C	7.9
Blaine Street/Watkins Drive	Signalized	30.9	C	2.5	37.8	D	3.3
Linden Street/Iowa Avenue	Signalized	**67.9**	**E**	**38.4**	**>80**	**F**	**>1**
Linden Street/Canyon Crest Drive	Signalized	27.1	C	2.6	**42.9**	**D**	**12.2**
Linden Street/Aberdeen Drive	AWSC	9.5	A	0.0	12.7	**B**	0.0
University Avenue/Kansas Avenue	Signalized	15.3	B	-0.5	**54.7**	**D**	**7.7**
University Avenue/Chicago Avenue	Signalized	35.4	D	1.2	**>80**	**F**	**>1**
University Avenue/Iowa Avenue	Signalized	**40.5**	**D**	**6.8**	**78.0**	**E**	**34.0**
University Avenue/University Village	Signalized	12.8	B	-1.0	**71.5**	**E**	**53.1**
University Avenue/I-215 SB Ramps	Signalized	**30.3**	**C**	**10.9**	**74.8**	**E**	**56.1**
University Avenue/I-215 NB Ramps	Signalized	23.1	C	4.5	**>80**	**F**	**>1**
Parking Lot 1/Campus Drive	AWSC	**49.7**	**E**	**37.5**	**>80**	**F**	**>1**
Big Springs Rd/Campus Drive	AWSC	12.2	B	3.1	18.3	C	8.0
Big Springs Road/Watkins Drive	AWSC	27.7	D	3.5	25.4	D	2.4
Canyon Crest Drive/Campus Drive	Signalized	13.2	B	3.5	23.6	C	11.6
Citrus Drive/Campus Drive	SSSC	11.5	B	1.7	15.8	C	4.2
Eucalyptus Drive/Campus Drive	SSSC	14.2	B	3.3	18.8	C	7.0
Martin Luther King Boulevard/Chicago Avenue	Signalized	**>80**	**F**	**>1**	**>80**	**F**	**>1**
Martin Luther King Boulevard/Iowa Avenue	Signalized	29.2	C	2.9	**>80**	**F**	**>1**
Martin Luther King Boulevard/Lot 30	Signalized	**54.3**	**D**	**23.9**	**>80**	**F**	**>1**
Martin Luther King Boulevard/Canyon Crest Drive	Signalized	**>80**	**F**	**>1**	**>80**	**F**	**>1**
Martin Luther King Boulevard/I-215 SB Ramps	Signalized	18.4	B	0.0	**35.3**	**D**	**13.5**
Martin Luther King Boulevard/I-215 NB Ramps	AWSC	19.9	C	4.2	12.9	B	2.2
Le Conte Drive/Chicago Avenue	SSSC	33.1	D	2.0	18.1	C	1.1
Central Avenue/Chicago Avenue	Signalized	**>80**	**F**	**>1**	34.5	C	0.1
Central Avenue/Canyon Crest Drive	Signalized	40.5	D	0.0	**>80**	**F**	**>1**
Central Avenue/SR-60 SB Ramps	Signalized	18.0	B	0.0	17.0	B	0.0
Central Avenue/SR-60 NB Off Ramp	Signalized	20.8	C	0.0	17.2	B	0.0
Watkins Drive/SR-60 NB On Ramp	SSSC	**>50**	**F**	**<1**	26.5	D	0.0

Source: Fehr & Peers, 2011

[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*

Table 4.14-17
Intersection Levels of Service – 2020 Plus Project Mid-Day Peak Hour

		Mid-Day Peak Hour		
Intersection	Control	Delay[1]	LOS	Change in Delay
Third Street/Chicago Avenue	Signalized	37.7	D	2.4
University Avenue/Iowa Avenue	Signalized	44.6	D	2.8
University Avenue/University Village	Signalized	16.3	B	0.5
University Avenue/I-215 SB Ramps	Signalized	19.7	B	2.4
University Avenue/I-215 NB Ramps	Signalized	23.2	C	3.4

Source: Fehr & Peers, 2010

[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*

Intersections within City or Caltrans Jurisdiction

Third Street/Chicago Avenue

This intersection would operate at LOS F during the AM peak hour and LOS E during the PM peak hour under Year 2020 No Project conditions. With the addition of project traffic, the intersection would operate at LOS F during the AM and PM peak hours. The increase in delay is greater than 1 second in the AM peak hour and 2 seconds in the PM peak hour, which exceeds the City's threshold of 1 second at an LOS F intersection and 2 seconds at an LOS E intersection. Therefore, there would be a significant impact at this location.

Blaine Street/Iowa Avenue

This intersection would operate at LOS E during the AM peak hour and LOS D during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS F during both the AM and PM peak hours. The increase in delay due to project traffic would be greater than 1 second during both peak hours, which exceeds the City's threshold of 1 second at an LOS F intersection. Therefore, there would be a significant impact at this location.

Linden Street/Iowa Avenue

This intersection would operate at LOS C during the AM peak hour and LOS E during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS E in the AM peak hour and LOS F in the PM peak hour. The increase in delay due to

project traffic would be nearly 30 seconds during both peak hours, which exceeds the City's threshold of 8 seconds at an LOS C intersection and 2 seconds at an LOS E intersection. Therefore, there would be a significant impact at this location.

University Avenue/Kansas Avenue

This intersection would operate at LOS B during the AM peak hour and LOS D during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would continue operate at LOS B in the AM peak hour and LOS D in the PM peak hour. The increase in delay due to project traffic would be more than 7 seconds during the PM peak hour, which exceeds the City's threshold of 5 seconds at an LOS D intersection. Therefore, there would be a significant impact at this location.

University Avenue/Chicago Avenue

This intersection would operate at LOS C during the AM peak hour and LOS E during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS D in the AM peak hour and LOS F in the PM peak hour. The increase in delay due to project traffic would be more than 2 seconds during the PM peak hour, which exceeds the City's threshold of 2 seconds at an LOS E intersection. Therefore, there would be a significant impact at this location.

University Avenue/Iowa Avenue

This intersection would operate at LOS C during the AM peak hour and LOS D during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS D in the AM peak hour and LOS E in the PM peak hour. The increase in delay due to project traffic would be 34 seconds during the PM peak hour, which exceeds the City's threshold of 5 seconds at an LOS E intersection. Therefore, there would be a significant impact at this location.

University Avenue/University Village

This intersection would operate at LOS B during the AM and PM peak hours under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS B in the AM peak hour and LOS E in the PM peak hour. The increase in delay due to project traffic would be more than 53 seconds during the PM peak hour, which exceeds the City's threshold of 10 seconds at an LOS B intersection. Therefore, there would be a significant impact at this location.

University Avenue/I-215 SB Ramps

This intersection would operate at LOS B during the AM and PM peak hours under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS C in the AM peak hour and LOS E in the PM peak hour. The increase in delay due to project traffic would be more than 10 seconds in the AM peak hour and 56 seconds in the PM peak hour, which exceeds the City's threshold of 10 at an LOS B intersection. Therefore, there would be a significant impact at this location.

University Avenue/I-215 NB Ramps

This intersection would operate at LOS B during the AM peak hour and LOS C during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS C in the AM peak hour and LOS F in the PM peak hour. The increase in delay due to project traffic would be more than 50 seconds during the PM peak hour, which exceeds the City's threshold of 8 seconds at an LOS C intersection. Therefore, there would be a significant impact at this location.

MLK/Chicago Avenue

This intersection would operate at LOS E during the AM peak hour and LOS F during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS F in the AM and PM peak hours. The increase in delay due to project traffic would be more than 11 seconds during the AM peak hour and more than 1 second during the PM peak hour, which exceeds the City's threshold of 2 seconds at an LOS E intersection and 1 second at an LOS F intersection. Therefore, there would be a significant impact at this location.

MLK/Iowa Avenue

This intersection would operate at LOS C during the AM peak hour and LOS E during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS C in the AM peak hour and LOS F in the PM peak hour. The increase in delay due to the addition of project traffic would be more than 5 seconds during the PM peak hour, which exceeds the City's threshold of 2 seconds at an LOS E intersection. Therefore, there would be a significant impact at this location.

MLK/Lot 30

This intersection would operate at LOS C during the AM peak hour and LOS D during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would

operate at LOS D in the AM peak hour and LOS F in the PM peak hour. The increase in delay due to the addition of project traffic would be more than 8 seconds during the AM peak hour and more than 5 second during the PM peak hour, which exceeds the City's threshold of 8 seconds at an LOS C intersection and 5 seconds at an LOS D intersection. Therefore, there would be a significant impact at this location.

MLK/Canyon Crest Drive

This intersection would operate at LOS F during the AM and PM peak hours under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS F in the AM and PM peak hours. The increase in delay due to the addition of project traffic would be more than 1 second during the AM and PM peak hours, which exceeds the City's threshold of 1 second at an LOS F intersection. Therefore, there would be a significant impact at this location.

Central Avenue/Chicago Avenue

This intersection would operate at LOS F during the AM peak hour and LOS C during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS F in the AM peak hour and LOS C in the PM peak hour. The increase in delay due to the addition of project traffic would be more than 1 second during the AM peak hour, which exceeds the City's threshold of 1 second at an LOS F intersection. Therefore, there would be a significant impact at this location.

Central Avenue/Canyon Crest Drive

This intersection would operate at LOS D during the AM peak hour and LOS E during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS D in the AM peak hour and LOS F in the PM peak hour. The increase in delay due to the addition of project traffic would be more than 17 seconds during the PM peak hour, which exceeds the City's threshold of 2 seconds at an LOS E intersection. Therefore, there would be a significant impact at this location.

Linden Street/Canyon Crest Drive

This intersection would operate at LOS C during the AM and PM peak hours under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS D in the PM peak hour. The increase in delay due to the addition of project traffic would be more than 12 seconds during

the PM peak hour, which exceeds the City's threshold of 8 seconds at an LOS C intersection. Therefore, there would be a significant impact at this location.

MLK/I-215 SB Ramps

This intersection would operate at LOS B during the AM peak hour and LOS C during the PM peak hour under Year 2020 No Project Conditions. With the addition of project traffic, this intersection would operate at LOS D in the PM peak hour. The increase in delay due to the addition of project traffic would be more than 8 second during the AM peak hour, which exceeds the City's threshold of 8 second at an LOS C intersection. Therefore, there would be a significant impact at this location.

The following improvements would address the project's contribution to the cumulative impact at each of the 17 affected intersections under 2020 Plus Project conditions.

- **Third Street/Chicago Avenue:** Reconfigure the intersection of Third Street/Chicago Avenue to add a right-turn lane northbound and southbound. Convert existing northbound and southbound through/right-turn lanes to through lanes. With these improvements, the signal would need to be retimed as well. There is adequate right-of-way at this location. Therefore, this improvement is considered feasible. With the implementation of these improvements, the intersection would improve to LOS E in the AM and PM peak hours.

- **Blaine Street/Iowa Avenue:** Reconfigure the intersection of Blaine Street/Iowa Avenue to add a second left-turn lane to the northbound approach. Add a westbound right-turn lane to allow the existing through/right-turn lane to operate as a through lane. With these improvements, the signal would need to be retimed as well. There is adequate right-of-way at this location. Therefore, this improvement is considered feasible. With the implementation of these improvements, the intersection would improve to LOS E in the AM peak hour and LOS D during the PM peak hour.

- **Linden Street/Iowa Avenue**: Reconfigure the intersection of Linden Street/Iowa Avenue to add a right-turn lane to the southbound approach which is currently a through/right-turn lane. Convert the existing through/right-turn lane to a through lane. Optimize signal timing to allow for new lane configuration. There is adequate right-of-way at this location. Therefore, this improvement is considered feasible. With the implementation of these improvements, the intersection would improve to LOS C in the AM peak hour and LOS D in the PM peak hour.

- **University Avenue/Kansas Avenue:** Retime the traffic signal at the intersection of University Avenue/Kansas Avenue to provide additional green time to better accommodate the additional traffic traveling through this intersection. Retiming of the traffic signal is considered feasible. With the implementation of this improvement, the intersection would operate at LOS D during the PM peak hour.

- **University Avenue/Chicago Avenue:** Retime the traffic signal at the intersection of University Avenue/Chicago Avenue to provide additional green time to better accommodate the additional traffic traveling through this intersection. Retiming of the traffic signal is considered feasible. With

the implementation of this improvement, the intersection would operate at LOS E during the PM peak hour.

- **University Avenue/Iowa Avenue:** Even with the reconstruction of this intersection to increase the number of lanes at the southbound approach, where there is potential right of way, the increase in the intersection delay would be greater than the significance threshold.

- **University Avenue/University Village:** Extensive reconstruction of the intersection would be required to mitigate impacts. Given the location of adjacent buildings, such a comprehensive reconstruction would not be feasible. The selection of an appropriate mitigation measure is compounded by the fact the impact occurs at an intersection which is experiencing little overall delay. The impact occurs solely because of the City's significance criteria, which identify significant impacts at intersections operating LOS A or B. Given these considerations, no feasible mitigation is available for this intersection.

- **University Avenue/I-215 SB Ramps:** Extensive reconstruction of the intersection would be required to mitigate impacts. Given the current configuration of the intersection, such a comprehensive reconstruction would not be feasible. The selection of an appropriate mitigation measure is compounded by the fact this impact occurs at an intersection which is experiencing little overall delay. The impact occurs solely because the City's significance criteria, which identify significant impacts at intersections operating LOS A or B. Given these considerations, no feasible mitigation is available for this intersection.

- **University Avenue/I-215 NB Ramps:** Extensive reconstruction of the intersection to add several lanes would be required to mitigate impacts. Given the current configuration of the intersection, such a comprehensive reconstruction would not be feasible.

- **MLK/Iowa Avenue:** Retime the traffic signal at the intersection of MLK/Iowa Avenue to provide additional time for certain intersection movements. Retiming of the traffic signal is considered feasible. With the implementation of this improvement, the intersection would improve to LOS D in the PM peak hour.

- **Central Avenue/Chicago Avenue:** Reconfigure the intersection of Central Avenue/Chicago Avenue to add additional northbound and southbound through lanes, convert eastbound and westbound to operate as a split-phase signal, and retime the traffic signal to account for these new improvements. There is adequate right-of-way at this location. Therefore, these improvements are considered feasible. With the implementation of these improvements, the intersection would still operate at LOS F but there would be no increase in delay.

- **Central Avenue/Canyon Crest Drive:** Reconfigure the intersection of Central Avenue/Canyon Crest Drive to add additional northbound and southbound through lanes, convert eastbound and westbound to operate as a split-phase signal, add a right-turn overlap for the northbound right-turn lane, and retime the traffic signal to account for these improvements. There is adequate right-of-way at this location. With the implementation of these improvements, the intersection would still operate at LOS F but there would be no increase in delay.

- **MLK/Chicago Avenue**: Reconfigure the intersection of MLK/Chicago Avenue to add through lanes in the northbound and southbound direction. Add a second westbound left-turn lane. There is

adequate right-of-way at this location. With the implementation of these improvements, the intersection would operate at LOS E during both the AM and PM peak hours.

- **MLK/Lot 30**: Reconfigure the intersection of MLK/Lot 30 to add a through-lane on the eastbound and westbound approach. Retime the signal to include a right-turn overlap phase on the southbound approach during the PM peak hour. There is adequate right-of-way at this location. With the implementation of these improvements, the intersection would improve to LOS C in the AM and PM peak hours.

- **MLK/Canyon Crest Drive**: Reconfigure the intersection of MLK/Canyon Crest Drive to add through lanes in the northbound and southbound direction and a second eastbound right-turn lane. There is adequate right-of-way at this location. With the implementation of these improvements, the intersection would improve to LOS E in the PM peak hour. The LOS would remain F for the AM peak hour, though there would be no increase in the delay which removes the impact in the AM peak hour.

- **Linden Street/Canyon Crest Drive**: Extensive reconstruction of the intersection would be required to mitigate impacts. While retiming the signal splits would improve delay, it would not reduce the delay to a less than significant level. Given the intersection is currently built out; such a comprehensive reconstruction would not be feasible.

- **MLK/I-215 SB Ramps**: Retime the traffic signal at the intersection of MLK/I-215 SB Ramps to optimize traffic splits. Retiming of the traffic signal is considered feasible. With the implementation of this improvement, the intersection would improve to LOS C in the PM peak hour.

Improvements to these intersections are within the jurisdiction of the City of Riverside and/or Caltrans. All of these improvements, as and when they are needed, would be implemented by the City and/or Caltrans. Therefore, implementation is not guaranteed, thus impacts will remain significant and unavoidable. However, the University would provide a proportional share of the cost of the improvement based on the project's actual contribution to the impact. The project's proportional share percentage of each improvement is provided in **Table 4.14-18, Intersection Level of Service – 2020 Conditions with Feasible Improvements**. Proportional share is determined by dividing project trips in 2020 by the increase in background traffic between 2020 and existing conditions. The mitigation program is described in detail below.

Mitigation Measures: The following mitigation measures would apply to the impacts identified above.

On-Campus Intersection of Parking Lot 1/Campus Drive

MM 4.14-1a Reconfigure the intersection of Parking Lot 1/Campus Drive to add a lane to the eastbound approach that would result in a joint left-turn/through lane with a separate right-turn lane and signalize intersection.

Off-Campus Affected Intersections

With respect to off-campus intersections that would be significantly affected by cumulative traffic, including the traffic associated with the amended 2005 LRDP, the following Campus Traffic Mitigation Program (CTMP) is proposed.

Campus Traffic Mitigation Program

The CTMP is a multi-component program to monitor trip generation, reduce peak-hour trips to the extent feasible, and/or participate in roadway improvements to mitigate off-site impacts at the intersections affected by the proposed project. Each component of this program is described below.

MM 4.14-1b: **Travel Demand Management.** To reduce on- and off-campus vehicle trips and resulting impacts, the University will enhance its Transportation Demand Management (TDM) program. TDM strategies will include measures to increase transit and shuttle use, encourage alternative transportation modes including bicycle transportation, implement parking policies that reduce demand, and other mechanisms that reduce vehicle trips to and from the campus. The University shall monitor the performance of campus TDM strategies through annual surveys.

MM 4.14-1c: **Transit Enhancement.** To enhance transit systems serving the campus, the University will work cooperatively with the RTA, and other local agencies to coordinate service routes with existing and proposed shuttle and transit programs.

MM 4.14-1d: **Sustainability and Monitoring.** The University shall review individual projects proposed under the amended 2005 LRDP for consistency with UC sustainable transportation policy and UCR TDM strategies to ensure that bicycle and pedestrian improvements, alternative fuel infrastructure, transit stops, and other project features that promote alternative transportation are incorporated into each project to the extent feasible.

MM 4.14-1e: **Campus Traffic Impact Monitoring.** The University will conduct traffic counts at key gateway locations on the campus every five years to determine the amount of traffic generated by the campus.

MM 4.14-1f: **Mitigation Payments.** The University's proportional share of the cost of the roadway improvements in **Table 4.14-18** is determined by dividing projected LRDP-related trips by the increase in background traffic between existing conditions and 2020. The projected proportional share percentage of each improvement is provided in **Table 4.14-18**, but the University's actual share will be determined based on actual project trips as established

by monitoring under **Mitigation Measure 4.14-1e**. It is anticipated that at the time that the City proposes an improvement at an affected intersection and requests a proportional share payment, the University's proportional share will be calculated using the following formula:

> Campus Proportional Share % of mitigation project = (calculated impact contribution from EIR) * (traffic growth in year X/projected LRDP traffic growth in 2020)
>
> Where:
>
> X = the year the mitigation project is constructed
>
> Traffic growth in year X = gateway counts in year X - gateway counts in LRDP baseline year 2010
>
> Projected LRDP traffic growth in 2020 = 2020 LRDP gateway forecasts from EIR - gateway counts in LRDP baseline year (2010)

The University's payment of its proportional share of the cost of the improvements will be made available to the jurisdiction no later than the start of construction of when implementation of the improvement is reasonably certain.

Contributions made by the University that exceed its proportional share of the cost of mitigation or that mitigates more than its impact may be credited towards mitigation of future impacts by the University.

Significance after Mitigation: Although implementation of **Mitigation Measures 4.14-1b** through **1d** would reduce the number of new project-related vehicle trips added to the affected facilities, all new trips would not be avoided by these measures. To fully address the project's impacts, capacity improvements at the affected facilities will be necessary. All of the improvements would fall under the jurisdiction of the City and/or Caltrans. The City and/or Caltrans have not programmed any improvements to these facilities at this time. The construction of the improvements identified above therefore cannot be assured, as it depends on actions by the City and/or Caltrans. Furthermore, as noted above, improvements that would restore operations to acceptable levels are not feasible at one of the 17 affected intersections the jurisdiction of the City and/or Caltrans. For all of these reasons, **Impact 4.14-1** remains a significant and unavoidable impact at 17 city intersections. If, however, the City and/or Caltrans programs improvements to the affected facilities, the University's implementation of **Mitigation Measures 4.14-1e** through **1f** would reduce the project's impact to a less than significant level at all intersections except two intersections that cannot be improved.

Table 4.14-18
Intersection Level of Service – 2020 Conditions with Feasible Improvements

		2020 Plus Project				2020 Plus Project with Improvements					
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
Intersection	Traffic Control	Delay (Seconds)	LOS	Delay (Seconds)	LOS	Delay (Seconds)	LOS	Delay (Seconds)	LOS	Mitigation	Mitigation Proportional Share Percentage (Projected[1])
1. Third Street/Chicago Avenue	Signalized	***>80***	***F***	***>80***	***F***	60.8	E	67.1	E	Add NB/SB right turn lanes & retime signal	53%
2. Blaine Street/Iowa Avenue	Signalized	***>80***	***F***	***>80***	***F***	67.6	E	51.5	D	Add NB left turn lane & WB right turn lane & retime signal	63%
6. Linden Street/Iowa Avenue	Signalized	***67.9***	***E***	***>80***	***F***	33.9	C	50.6	D	Add SB right turn lane & retime signal	73%
9. University Avenue/Kansas Avenue	Signalized	15.3	B	***54.7***	***D***	N/A		37.2	D	Retime signal	42%
10. University Avenue/Chicago Avenue	Signalized	35.4	D	***>80***	***F***	N/A		62.3	E	Retime signal	64%
15. Parking Lot 1/Campus Drive	AWSC	***49.7***	***E***	***>80***	***F***	4.5	A	31.5	C	Add EB right turn lane & signalize intersection	84%
21. Martin Luther King Boulevard/Chicago Ave	Signalized	***>80***	***F***	***>80***	***F***	64.2	E	73.0	E	Add NB & SB thru lanes & WB left-turn lane	47%
22. Martin Luther King Boulevard/Iowa Avenue	Signalized	28.1	C	***>80***	***F***	N/A		51.6	D	Retime signal	59%
23. Martin Luther King Boulevard/Lot 30	Signalized	***54.3***	***D***	***>80***	***F***	29.3	C	28.9	C	Add EB & WB thru lanes & retime signal	65%

Intersection	Traffic Control	2020 Plus Project AM Peak Hour Delay (Seconds)	2020 Plus Project AM Peak Hour LOS	2020 Plus Project PM Peak Hour Delay (Seconds)	2020 Plus Project PM Peak Hour LOS	2020 Plus Project with Improvements AM Peak Hour Delay (Seconds)	2020 Plus Project with Improvements AM Peak Hour LOS	2020 Plus Project with Improvements PM Peak Hour Delay (Seconds)	2020 Plus Project with Improvements PM Peak Hour LOS	Mitigation	Mitigation Proportional Share Percentage (Projected[1])
24. Martin Luther King Boulevard/Canyon Crest Drive	Signalized	***>80***	***F***	***>80***	***F***	>80	F	55.7	E	Add NB & SB thru lanes & EB right turn lane	62%
26. Martin Luther King Boulevard/I-215 SB Ramps	Signalized	***18.4***	***B***	***35.3***	***D***	N/A		29.1	C	Retime Signal	58%
28. Central Avenue/Chicago Avenue	Signalized	***>80***	***F***	34.5	C	***>80***	***F***	N/A		Add NB & SB thru lanes, add split-phase, & retime signal	14%
29. Central Avenue/Canyon Crest Drive	Signalized	40.5	D	***>80***	***F***	N/A		53.8	D	Add NB & SB thru lanes, add split-phase, & retime signal	37%

[1] *The actual proportional share shall be determined when the improvement is proposed by the City based on the University's actual trips and actual background growth.*

SBL = Southbound Left Turn

Bold values and shaded cells indicate intersections where significant impacts occur.

*Values in **bold font**, underlined and italicized indicate a significant impact based on significance criteria.*

Source: Fehr & Peers, January 2011.

Impact 4.14-2 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service under existing conditions. The impact would be significant.**

Impact 4.14-1 above presents the effects of campus traffic at full development under the amended 2005 LRDP, which is for purposes of this EIR assumed to occur by 2020. As all of the additional vehicle trips generated under the amended 2005 LRDP are not expected to be added to the study area transportation network immediately following approval of the proposed amendment, an existing plus project trips analysis is an unrealistic analysis. Nonetheless, given the recent Sunnyvale decision, such an analysis was conducted that evaluated the project's traffic impacts on study intersections under existing plus project conditions. As this is an unrealistic scenario, this analysis is included in this EIR for informational purposes only. All relevant 2005 LRDP Planning Strategies and a Program and Practice listed under **Impact 4.14-1** would still apply as applicable.

The traffic analysis for the Existing Plus Project conditions presents the levels of service at the study intersections that would result from the full implementation of the 2005 LRDP Amendment 2 if it were built out under current conditions. The proposed SOM would increase campus trips by approximately 3,826 during the AM peak hour and 6,070 during the PM peak hour, as shown in **Table 4.14-10**. In addition, the proposed SOM would increase campus trips by approximately 2,230 during the mid-day peak hour, as shown in **Table 4.14-11**. The rest of the development on the campus under the 2005 LRDP would result in approximately 1,168 vehicle trips during the AM, PM, and mid-day peak hours, as shown in **Table 4.14-10** and **Table 4.14-11**.

The increase in the number of campus-related peak hour trips would increase traffic volumes on the local street network, thus degrading traffic conditions at some intersections if applied to existing conditions. The Existing Plus Project traffic volumes are shown in **Figures 4.14-8a** through **8d**. **Table 4.14-19, Intersection Levels of Service – Existing Plus Project AM and PM Peak Hour,** presents the intersection level of service for the AM and PM peak hour and also reports the increase in delay which would occur during the peak hours.

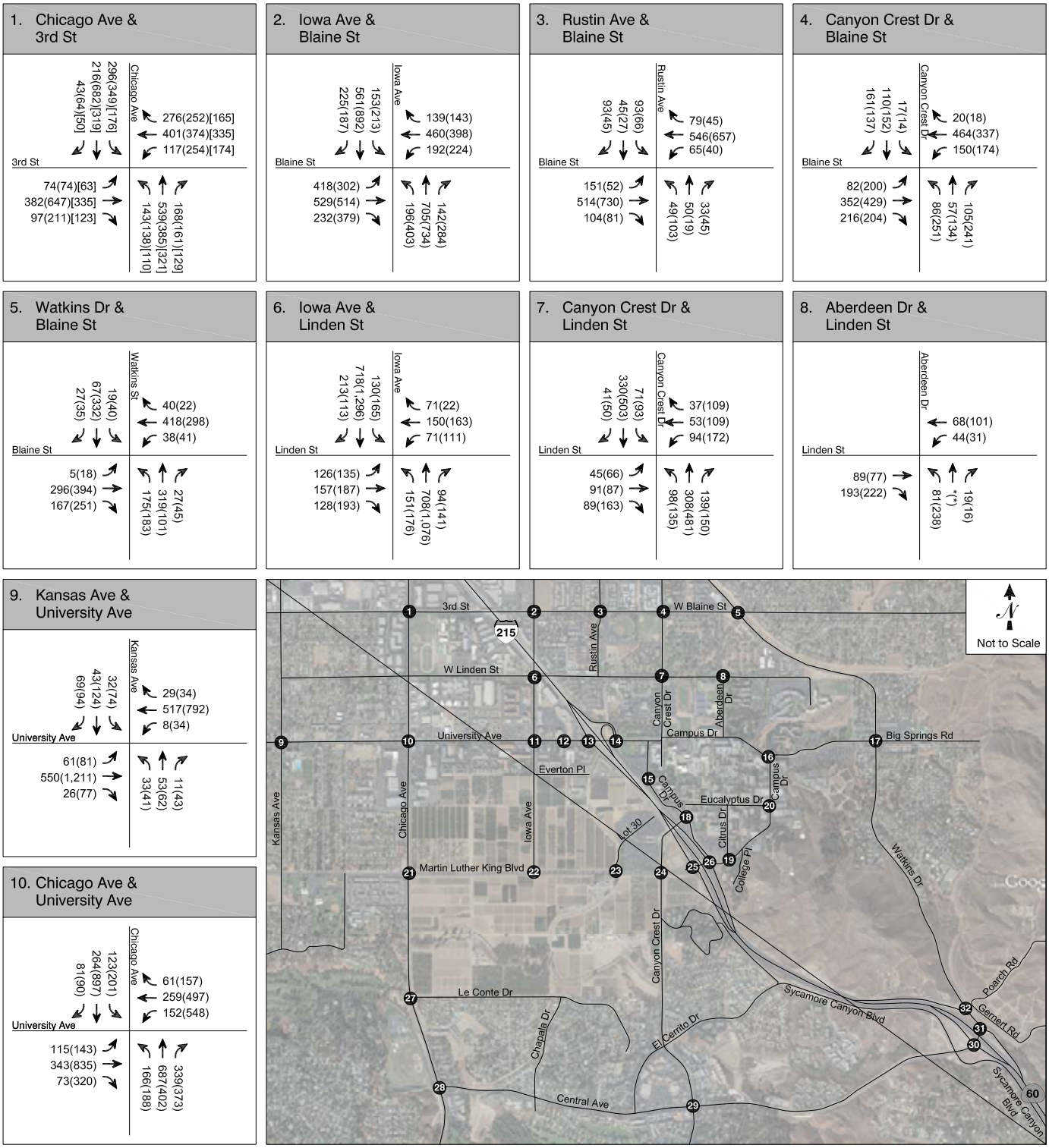
Table 4.14-19
Intersection Levels of Service – Existing Plus Project AM and PM Peak Hour

		AM Peak Hour			PM Peak Hour		
Intersection	Control	Delay[1]	LOS	Change in Delay	Delay[1]	LOS	Change in Delay
Third Street/Chicago Avenue	Signalized	**>80**	**F**	**>1**	**>80**	F	**>1**
Blaine Street/Iowa Avenue	Signalized	**65.4**	**E**	**21.4**	**70.7**	**E**	**35.2**
Blaine Street/Rustin Avenue	Signalized	63.5	E	-1.1	22.7	C	2.0
Blaine Street/Canyon Crest Drive	Signalized	21.5	C	2.0	26.6	C	4.6
Blaine Street/Watkins Drive	Signalized	29.5	C	2.4	34.0	C	2.8
Linden Street/Iowa Avenue	Signalized	**41.9**	**D**	**18.0**	**>80**	**F**	**>1**
Linden Street/Canyon Crest Drive	Signalized	25.0	C	0.0	32.6	C	4.3
Linden Street/Aberdeen Drive	AWSC	8.9	A	0.0	10.9	B	0.0
University Avenue/Kansas Avenue	Signalized	14.4	B	-0.7	41.2	D	2.0
University Avenue/Chicago Avenue	Signalized	34.9	C	1.1	**>80**	**F**	**>1**
University Avenue/Iowa Avenue	Signalized	36.1	D	4.1	**55.6**	**E**	**14.4**
University Avenue/University Village	Signalized	11.9	B	-1.7	**41.9**	**D**	**25.2**
University Avenue/I-215 SB Ramps	Signalized	25.8	C	7.1	**50.2**	**D**	**33.5**
University Avenue/I-215 NB Ramps	Signalized	21.5	C	3.5	**>80**	**F**	**>1**
Parking Lot 1/Campus Drive	AWSC	**33.0**	**D**	**22.2**	**>80**	**F**	**>1**
Big Springs Rd/Campus Drive	AWSC	11.2	B	2.5	15.2	C	5.7
Big Springs Road/Watkins Drive	AWSC	22.7	C	2.8	21.1	C	2.4
Canyon Crest Drive/Campus Drive	Signalized	11.7	B	2.5	15.2	B	-1.4
Citrus Drive/Campus Drive	SSSC	11.1	B	1.5	14.5	B	3.6
Eucalyptus Drive/Campus Drive	SSSC	13.5	B	3.1	17.3	B	6.1
MLK/Chicago Avenue	Signalized	**>80**	**F**	**>1**	**>80**	**F**	**>1**
MLK/Iowa Avenue	Signalized	28.3	C	6.0	**>80**	**F**	**>1**
MLK/Lot 30	Signalized	31.1	C	5.6	**63.3**	**E**	**36.8**
MLK/Canyon Crest Drive	Signalized	**>80**	**F**	**>1**	**>80**	**F**	**>1**
MLK/I-215 SB Ramps	Signalized	18.4	B	0.1	20.6	C	3.0
MLK/I-215 NB Ramps	AWSC	15.9	C	2.9	11.6	B	1.7
Le Conte Drive/Chicago Avenue	SSSC	23.4	C	1.1	14.7	B	0.7
Central Avenue/Chicago Avenue	Signalized	**>80**	**F**	**>1**	29.9	C	-0.1
Central Avenue/Canyon Crest Drive	Signalized	35.4	D	-0.2	45.2	D	4.6
Central Avenue/SR-60 SB Ramps	Signalized	17.7	B	0.0	15.2	B	0.0
Central Avenue/SR-60 NB Off Ramp	Signalized	19.8	B	0.0	16.8	B	0.0
Watkins Drive/SR-60 NB On Ramp	SSSC	**>50**	**F**	**<1**	20.9	C	0.0

Source: Fehr & Peers, 2010

Note: Deficient intersections are shown in ***Bold***

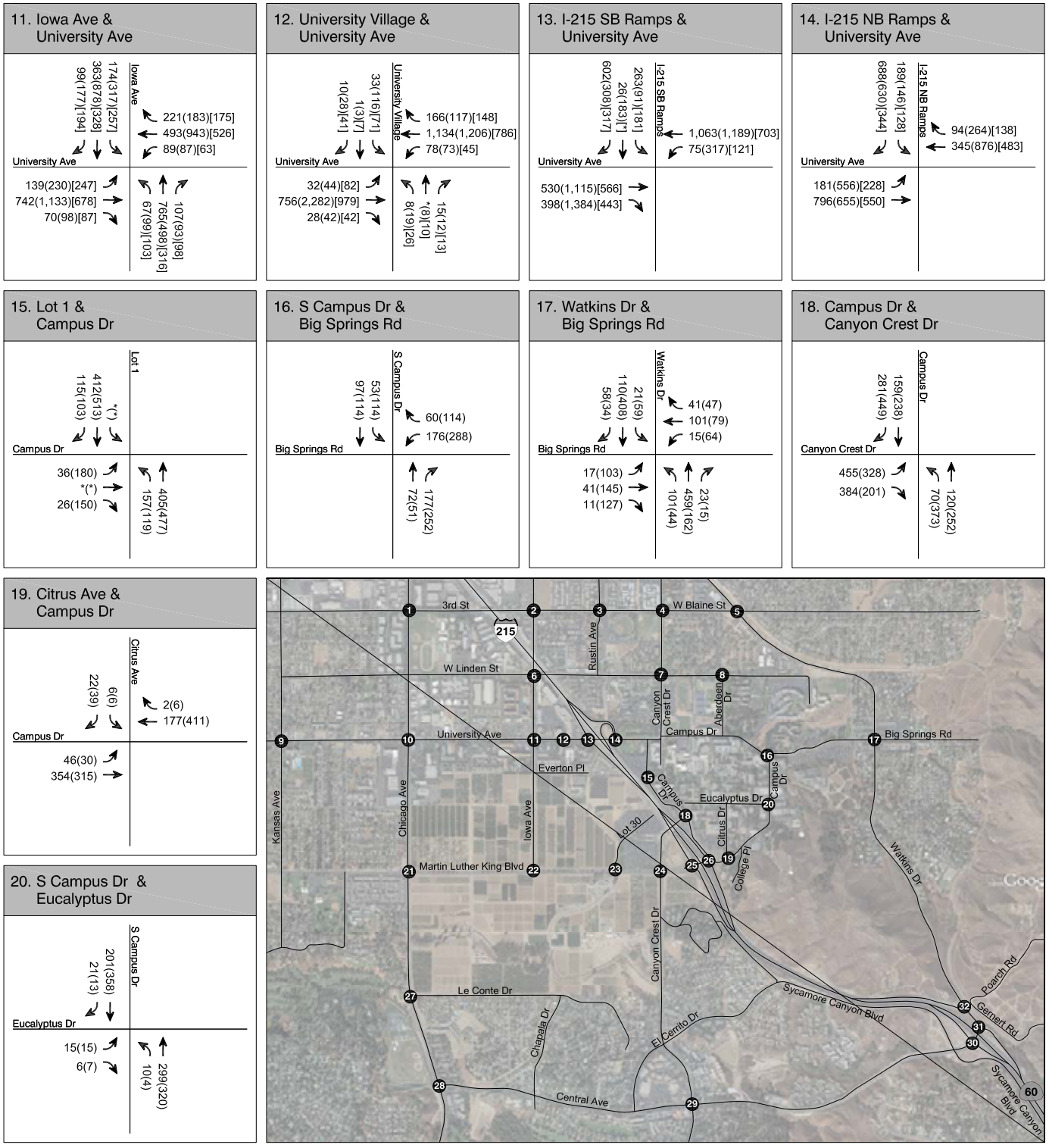
[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*



SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-8a**

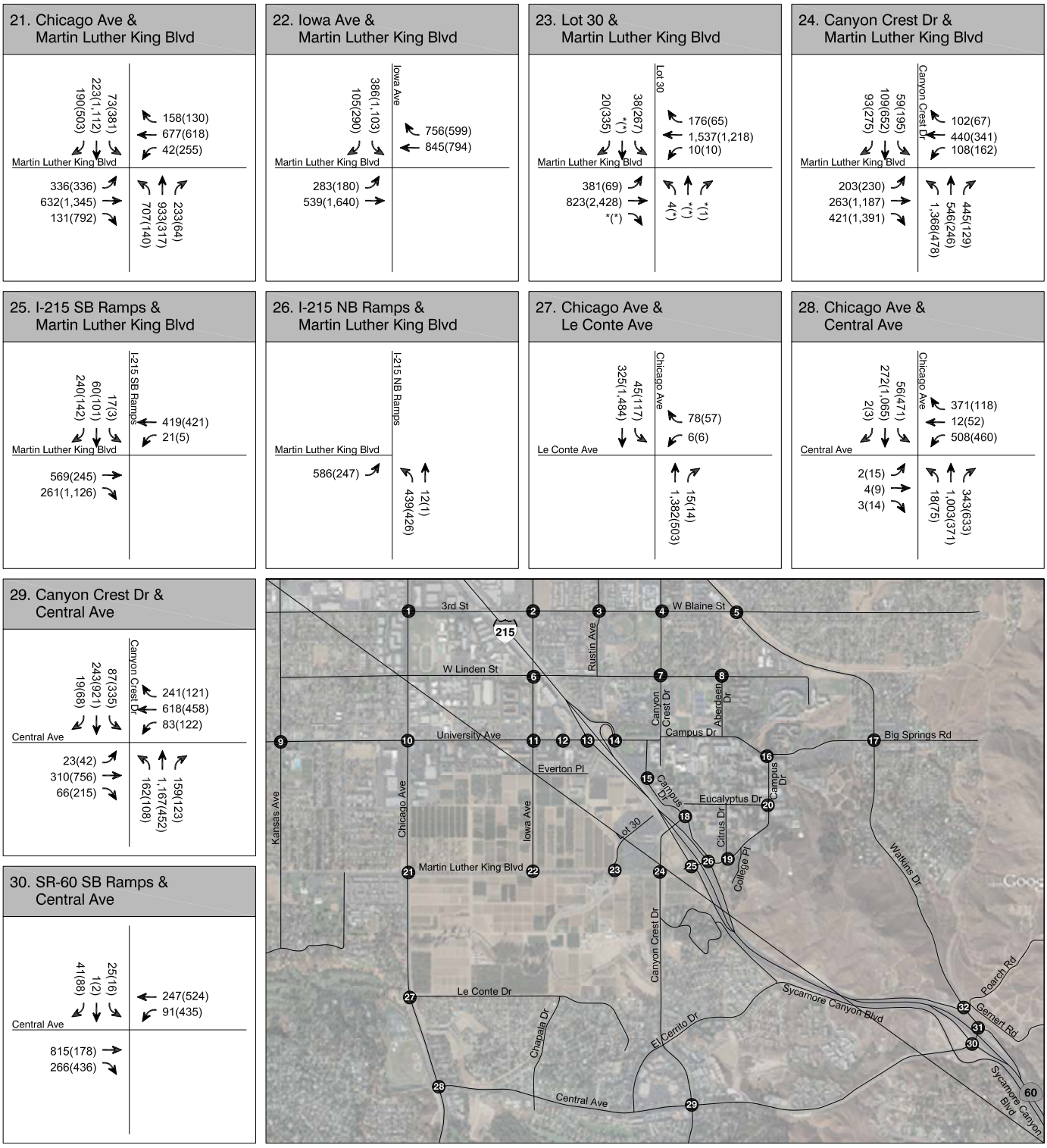
Existing Plus Project Peak Hour Traffic Volumes



SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-8b**

Existing Plus Project Peak Hour Traffic Volumes



LEGEND

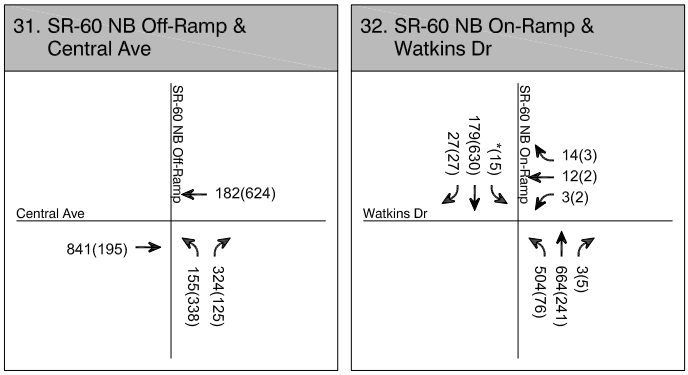
- # **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

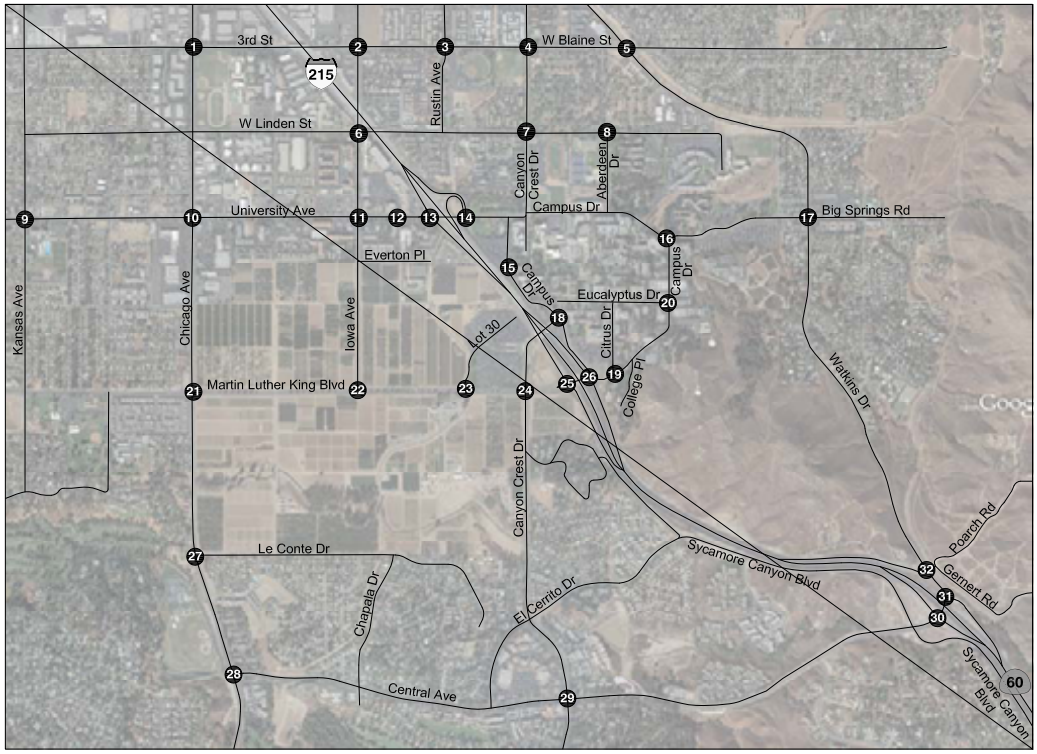
NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-8c**

Existing Plus Project Peak Hour Traffic Volumes





LEGEND

- (#) **Analyzed Intersection**
- X(X)[X] **AM(PM)[MD] Peak Hour Traffic Volumes**
- * **Negligible Volume**
- **Turn Lane**

NOT TO SCALE

SOURCE: FEHR & PEERS – December 2010

FIGURE **4.14-8d**

Existing Plus Project Peak Hour Traffic Volumes

Table 4.14-20, Intersection Levels of Service – Existing Plus Project Mid-Day Peak Hour reports the Existing Plus Project results for the mid-day peak hour.

Table 4.14-20
Intersection Levels of Service – Existing Plus Project Mid-Day Peak Hour

		Mid-Day Peak Hour		
Intersection	Control	Delay[1]	LOS	Change in Delay
Third Street/Chicago Avenue	Signalized	34.4	C	1.9
University Avenue/Iowa Avenue	Signalized	41.8	D	1.4
University Avenue/University Village	Signalized	14.7	B	-1.1
University Avenue/I-215 SB Ramps	Signalized	19.0	B	2.1
University Avenue/I-215 NB Ramps	Signalized	22.0	C	2.8

Source: Fehr & Peers, 2010

[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*

A total of 14 study intersections that would be significantly affected by the addition of the project traffic under Existing Plus Project Conditions are discussed in further detail below.

Third Street/Chicago Avenue

With the addition of project traffic, this intersection would operate at LOS F during the AM peak hour and LOS F during the PM peak hour. The increase in delay is greater than 1 second in the AM peak hour and 2 seconds in the PM peak hour, which exceeds the City's threshold of 1 second at an LOS F intersection and 2 seconds at an LOS E intersection. Therefore, there would be a significant impact at this location.

Blaine Street/Iowa Avenue

This intersection would operate at LOS E during both the AM and PM peak hours with the addition of project traffic. The increase in delay due to project traffic would be greater than 2 seconds during both peak hours, which exceeds the City's threshold of 2 second at an LOS E intersection. Therefore, there would be a significant impact at this location.

Linden Street/Iowa Avenue

This intersection would operate at LOS D during the AM peak hour and LOS F during the PM peak hour with the addition of project traffic. The increase in delay due to project traffic would be more than 16

seconds during both peak hours, which exceeds the City's threshold of 8 seconds at an LOS C intersection and 2 seconds at an LOS E intersection. Therefore, there would be a significant impact at this location.

University Avenue/Chicago Avenue

The addition of project traffic would increase the delay at this intersection by 32 seconds in the PM peak hour which exceeds the City's allowable threshold of 5 seconds at an LOS D intersection. Therefore, there would be a significant impact at this location.

University Avenue/Iowa Avenue

With the addition of project traffic, this intersection would operate at LOS D in the AM peak hour and LOS E in the PM peak hour. The increase in delay due to project traffic would be more than 14 seconds during the PM peak hour, which exceeds the City's threshold of 2 seconds at an LOS E intersection. Therefore, there would be a significant impact at this location.

University Avenue/University Village

With the addition of project traffic, this intersection would operate at LOS D in the PM peak hour. The increase in delay due to project traffic would be more than 25 seconds during the PM peak hour, which exceeds the City's threshold of 10 seconds at an LOS B intersection. Therefore, there would be a significant impact at this location.

University Avenue/I-215 SB Ramps

With the addition of project traffic, this intersection would operate at LOS D in the PM peak hour. The increase in delay due to project traffic would be more than 33 seconds in the PM peak hour, which exceeds the City's threshold of 10 at an LOS B intersection. Therefore, there would be a significant impact at this location.

University Avenue/I-215 NB Ramps

With the addition of project traffic, this intersection would operate at LOS F in the PM peak hour. The increase in delay due to project traffic would be more than 50 seconds during the PM peak hour, which exceeds the City's threshold of 8 seconds at an LOS C intersection. Therefore, there would be a significant impact at this location.

Parking Lot 1/Campus Drive

With the addition of project traffic, this intersection would operate at LOS D in the AM peak hour and LOS F in the PM peak hour. As this intersection is considered to be within the boundary of the campus, any increase in traffic at an LOS F intersection is considered to be a significant impact.

Martin Luther King Boulevard/Chicago Avenue

With the addition of project traffic, this intersection would operate at LOS F in the AM and PM peak hours. The increase in delay due to project traffic would be more than 11 seconds during the AM peak hour and more than 1 second during the PM peak hour, which exceeds the City's threshold of 2 seconds at an LOS E intersection and 1 second at an LOS F intersection. Therefore, there would be a significant impact at this location.

Martin Luther King Boulevard/Iowa Avenue

With the addition of project traffic, this intersection would operate at LOS F in the PM peak hour. The increase in delay due to the addition of project traffic would be more than 5 seconds during the PM peak hour, which exceeds the City's threshold of 2 seconds at an LOS E intersection. Therefore, there would be a significant impact at this location.

Martin Luther King Boulevard/Lot 30

With the addition of project traffic, this intersection would operate at LOS F in the PM peak hour. The increase in delay due to the addition of project traffic would be over 36 seconds during the PM peak hour, which exceeds the City's threshold of 5 seconds at an LOS D intersection. Therefore, there would be a significant impact at this location.

Martin Luther King Boulevard/Canyon Crest Drive

This intersection currently operates at LOS F during the AM and PM peak hours. The increase in delay due to the addition of project traffic would be more than 1 second during the AM and PM peak hours, which exceeds the City's threshold of 1 second at an LOS F intersection. Therefore, there would be a significant impact at this location.

Central Avenue/Chicago Avenue

This intersection currently operates at LOS F during the AM peak hour. The increase in delay due to the addition of project traffic would be more than 1 second during the AM peak hour, which exceeds the

City's threshold of 1 second at an LOS F intersection. Therefore, there would be a significant impact at this location.

Mitigation Measures: Implement **Mitigation Measure 4.14-1b** through **f,** which will ensure that as the campus grows and the traffic on city streets increases as a result of campus growth, the growth in campus traffic will be monitored and a program will be implemented to pay the Campus's proportional share of the cost of necessary improvements at intersections affected by the amended 2005 LRDP.

Significance after Mitigation: For the same reasons presented under **Impact 4.14-1**, the impact would be significant and unavoidable.

Impact 4.14-3 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes on local roadways but not degrade roadway levels of service under 2020 conditions. The impact would be less than significant.**

The addition of about 3.1 million gsf of building space associated with the SOM would result in additional vehicular traffic on and around the campus that was not previously considered in the 2005 LRDP EIR. For reasons presented above in **Impact 4.14-1**, all of the other elements of the proposed 2005 LRDP Amendment 2 would not result in an increase in vehicular traffic on and around the campus that was not considered in the 2005 LRDP EIR.

During the planning horizon of the amended 2005 LRDP, future development of the campus would continue to be guided as applicable by a range of LRDP Planning Strategies, described above under **Impact 4.14-1**, that relate to transportation and traffic. In addition, continued implementation as applicable of PP 4.14-1 and the CTMP, described above under **Impact 4.14-1**, would require UCR to continue to implement a Transportation Demand Management program that meets or exceeds all trip reduction and AVR requirements of the SCAQMD. The 2005 LRDP Planning Strategies and Programs and Practices are assumed to be part of the proposed project.

Table 4.14-21, Roadway Segment Volumes and Operations – 2020 Plus Project, provides the roadway segment volumes and operations. As shown in the **Table 4.14-21**, all of the roadway segments would operate at LOS D or better. Therefore, the impact of the proposed project on local roadways would be less than significant.

Table 4.14-21
Roadway Segment Volumes and Operations - 2020 Plus Project

Roadway	Classification	LOS D Volume	2020 Plus Project Volume	LOS	Significant Impact?
MLK/14th Street					
Canyon Crest Drive to Iowa Avenue	110 ft. Arterial (4 lanes)	33,000	31,873	D or better	No
Iowa Avenue to Chicago Avenue	110 ft. Arterial (4 lanes)	33,000	25,814	D or better	No
Chicago Avenue					
MLK to University Avenue	110 ft. Arterial (4 lanes)	33,000	22,780	D or better	No
University Avenue to Blaine Street	110 ft. Arterial (4 lanes)	33,000	20,974	D or better	No
University Avenue					
I-215 to Iowa Avenue	110 ft. Arterial (4 lanes)	33,000	29,880	D or better	No
Iowa Avenue to Chicago Avenue	110 ft. Arterial (4 lanes)	33,000	26,860	D or better	No
Iowa Avenue					
MLK to University Avenue	110 ft. Arterial (4 lanes)	33,000	17,191	D or better	No
University Avenue to Blaine Street	110 ft. Arterial (4 lanes)	33,000	25,434	D or better	No

Source: Fehr & Peers, 2010

[1] *Delay for intersections based on application of 2000 Highway Capacity Manual Methodology. Delay was calculated using Synchro 6.0 software.*

Mitigation Measures: No mitigation is required.

Impact 4.14-4 **Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes on local roadways but not degrade roadway levels of service under existing conditions. The impact would be less than significant.**

As stated under **Impact 4.14-2** above, all of the additional vehicle trips generated under the amended 2005 LRDP are not expected to be added to the study area transportation network immediately following approval of the proposed amendment, an existing plus project trips analysis is an unrealistic analysis. Nonetheless given the recent Sunnyvale decision, such an analysis was conducted that evaluated the project's traffic impacts on roadway levels of service under existing plus project conditions. As this is an unrealistic scenario, this analysis is included in this EIR for informational purposes only. All 2005 LRDP Planning Strategies and a Program and Practice listed under **Impact 4.14-1** would still apply as applicable.

Table 4.14-22, Roadway Segment Volumes and Operations – Existing Plus Project Conditions, provides the roadway segment volumes and operations. As shown in the **Table 4.14-22**, all of the roadway segments would operate at LOS D or better. Therefore, the impact of the proposed project on local roadways would be less than significant.

Table 4.14-22
Roadway Segment Volumes and Operations - Existing Plus Project Conditions

Roadway	Classification	LOS D Volume	Existing Plus Project Volume	LOS	Significant Impact?
MLK/14th Street					
Canyon Crest Drive to Iowa Avenue	110 ft. Arterial (4 lanes)	33,000	28,292	D or better	No
Iowa Avenue to Chicago Avenue	110 ft. Arterial (4 lanes)	33,000	22,529	D or better	No
Chicago Avenue					
MLK to University Avenue	110 ft. Arterial (4 lanes)	33,000	19,946	D or better	No
University Avenue to Blaine Street	110 ft. Arterial (4 lanes)	33,000	18,294	D or better	No
University Avenue					
I-215 to Iowa Avenue	100 ft. Arterial (4 lanes)	33,000	26,590	D or better	No
Iowa Avenue to Chicago Avenue	100 ft. Arterial (4 lanes)	33,000	23,626	D or better	No
Iowa Avenue					
MLK to University Avenue	110 ft. Arterial (4 lanes)	33,000	15,265	D or better	No
University Avenue to Blaine Street	110 ft. Arterial (4 lanes)	33,000	22,423	D or better	No

Source: Fehr & Peers, 2010

Mitigation Measures: No mitigation is required.

Impact 4.14-5 **Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. The impact would be significant.**

Construction vehicle traffic associated with implementation of development accommodated by the 2005 LRDP Amendment 2 could result in short-term impacts at intersections in the vicinity of the campus. Construction of buildings and facilities on the campus would involve the removal of construction debris, grading, and/or excavation of sites (for building foundation or below grade levels) and associated export of earth materials, as well as delivery of construction materials and trips associated with construction workers and equipment. In general, construction of individual buildings is not anticipated to result in

substantial construction-related trip volumes, except for those facilities that could involve substantial excavation and export of earth materials, which could result in periods of heavy truck traffic that could negatively affect road segments and intersections in the vicinity of the project.

Future construction projects on the campus, including the *SOM* site, could overlap with other projects on the campus and create the potential for overall campus-related construction traffic that could result in localized impacts at individual intersections in proximity to construction sites or along the designated haul routes used for export or delivery of construction materials and equipment. Because of the relatively constrained nature of access to and from the East Campus (due to the existence of the I-215/SR-60 freeway and the number of residential streets in the campus vicinity), this would be more of an issue for projects on the East Campus and less so for the West Campus.

However, UCR would implement as applicable the following existing campus Program and Practice (PP) to reduce congestion resulting from construction vehicles during the planning horizon of the amended 2005 LRDP and is assumed as part of the proposed project.

PP 4.14-2 The Campus will periodically assess construction schedules of major projects to determine the potential for overlapping construction activities to result in periods of heavy construction vehicle traffic on individual roadway segments, and adjust construction schedules, work hours, or access routes to the extent feasible to reduce construction-related traffic congestion.

Continued implementation of existing campus PP 4.14-2 would reduce potential impacts by requiring coordination of construction activities, in particular to avoid overlap of activities with heavy truck traffic, such as excavation, or demolition of large structures. However, because of the imprecise nature of construction schedules, temporary construction vehicle traffic may still result in localized congestion. This impact would be potentially significant**.**

Mitigation Measures: No other mitigation is feasible.

Significance after Mitigation: The impact would be significant and unavoidable.

Impact 4.14-6 **Implementation of the proposed 2005 LRDP Amendment 2 would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under 2020 conditions. The impact would be significant.**

Implementation of the amended 2005 LRDP would result in an increase in campus-related vehicle trips, which would also increase traffic volumes on the highway network. As discussed in **subsection 4.14.2, Existing Conditions** and shown in **Table 4.14-6**, all segments of SR-60 and SR-91 operated at an acceptable level of service under current conditions. In addition, all segments along I-215 with the exception of one currently operate at an acceptable LOS.

The Traffic Study for the proposed project conducted a freeway segment LOS analysis for the study freeway segments under Year 2020 Plus Project conditions. The results of the analysis are provided in **Table 4.14-23, Freeway Levels of Service – 2020 Plus Project AM and PM Peak Hour**.

Table 4.14-23
Freeway Levels of Service – 2020 Plus Project AM and PM Peak Hour

		2020 No Project Conditions			2020 Plus Project Conditions			
Freeway Segment	**Peak Hour**	**Volume**	**LOS**	**V/C**	**Volume**	**LOS**	**V/C**	**Change V/C**
I-215 NB, s/o 60	AM	8,200	D	0.91	8,769	E	0.98	0.06
	PM	7,701	D	0.86	8,271	D	0.91	0.05
I-215 SB, s/o 60	AM	6,840	D	0.91	7,171	E	0.94	0.03
	PM	6,871	D	0.92	**7,767**	**F(0)**	**1.02**	**0.10**
I-215 NB, b/w 60 & Central	AM	8,652	F(0)	1.15	**9,221**	**F(0)**	**1.23**	**0.08**
	PM	7,688	F(0)	1.03	**8,258**	**F(0)**	**1.09**	**0.06**
I-215 SB, b/w 60 & Central	AM	4,180	A	0.35	4,511	B	0.36	0.02
	PM	8,370	C	0.70	9,266	C	0.76	0.06
I-215 NB, b/w Central & MLK	AM	9,697	F(0)	1.08	**10,266**	**F(0)**	**1.14**	**0.06**
	PM	8,064	D	0.90	8,634	E	0.95	0.05
I-215 SB, b/w Central & MLK	AM	5,457	C	0.57	5,788	C	0.59	0.02
	PM	9,752	F(0)	1.03	**10,666**	**F(0)**	**1.10**	**0.08**
I-215 NB, b/w MLK & University	AM	8,277	F(0)	1.10	**8,843**	**F(0)**	**1.17**	**0.06**
	PM	6,869	D	0.92	7,361	E	0.97	0.05
I-215 SB, b/w MLK & University	AM	6,707	C	0.71	7,001	C	0.73	0.02
	PM	12,379	F(1)	1.30	**13,164**	**F(2)**	**1.37**	**0.07**
I-215 NB, b/w University & 3rd	AM	9,138	F(0)	1.02	**9,241**	**F(0)**	**1.02**	**0.01**
	PM	7,117	D	0.79	7,655	D	0.84	0.05
I-215 SB, b/w University & 3rd	AM	4,715	C	0.63	4,866	C	0.64	0.01
	PM	6,986	E	0.93	7,250	E	0.97	0.04

		2020 No Project Conditions			2020 Plus Project Conditions			
Freeway Segment	**Peak Hour**	**Volume**	**LOS**	**V/C**	**Volume**	**LOS**	**V/C**	**Change V/C**
I-215 NB, b/w 3rd & Spruce	AM	9,261	D	0.84	9,378	D	0.85	0.01
	PM	6,724	C	0.61	7,316	C	0.65	0.04
I-215 SB, b/w 3rd & Spruce	AM	5,377	C	0.72	5,513	C	0.72	0.00
	PM	7,411	E	0.99	7,498	E	1.00	0.01
I-215 NB, n/o 91/60	AM	6,972	D	0.87	7,056	D	0.88	0.01
	PM	5,887	C	0.74	6,285	C	0.76	0.03
I-215 SB, n/o 91/60	AM	6,496	D	0.81	6,632	D	0.81	0.00
	PM	6,075	C	0.76	6,162	C	0.76	0.00
60 EB, e/o 215	AM	5,377	C	0.72	5,410	C	0.72	0.01
	PM	7,643	F(0)	1.02	**7,838**	**F(0)**	**1.05**	**0.03**
60 WB, e/o 215	AM	8,569	D	0.78	8,569	D	0.78	0.00
	PM	7,591	C	0.69	7,591	C	0.69	0.00
60 EB, w/o 91/215	AM	6,496	D	0.87	6,529	D	0.87	0.01
	PM	6,075	D	0.81	6,270	D	0.84	0.03
60 WB, w/o 91/215	AM	6,972	D	0.87	6,972	D	0.87	0.00
	PM	5,887	C	0.74	5,887	C	0.74	0.00
91 EB, w/o 215/60	AM	6,018	D	0.80	6,051	D	0.81	0.00
	PM	4,908	C	0.65	5,103	C	0.68	0.03
91 WB, w/o 215/60	AM	7,756	D	0.82	7,756	D	0.82	0.00
	PM	7,207	C	0.76	7,207	C	0.76	0.00

Source: Fehr & Peers, 2011

As shown in **Table 4.14-23**, the operating conditions of all freeway segments operating unacceptably under 2020 No Project conditions would continue to do so with the addition of project traffic.

In addition to freeway level of service analysis reported above, an analysis of the level of service of the freeway merge/diverge sections at the SR-60/Central Avenue interchange and an analysis of the level of service of the freeway weaving section at the I-215/University Avenue interchange was completed for the proposed project. **Tables 4.14-23a** and **4.14-23b** report the results of the analysis. Similar to the results of the freeway mainline analysis, the merge/diverge and weaving analyses show that these facilities would operate at unacceptable levels of service under 2020 conditions both with and without the addition of project traffic.

Table 4.14-23a
Freeway Merge/Diverge Levels of Service under 2020 plus Project Conditions

			Cumulative No Project (2020)		Cumulative with Project (2020)	
Segment	Peak Hour	Analysis Type	Density (pc/ln/mi)	LOS	Density (pc/ln/mi)	LOS
SR-60 NB south of Central	AM	Major Diverge	N/A [1]	F	N/A [1]	F
	PM		N/A [1]	F	N/A [1]	F
SR-60 NB north of Central	AM	Basic	N/A [1]	F	N/A [1]	F
	PM		N/A [1]	F	N/A [1]	F
SR-60 SB south of Central	AM	Basic	14.6	B	15.5	B
	PM		N/A [1]	F	N/A [1]	F
SR-60 SB north of Central	AM	Diverge	26.1	C	27.2	C
	PM		N/A [1]	F	N/A [1]	F

Source: Fehr & Peers, 2011
[1] *Volume sufficiently high that density exceeds allowable threshold, LOS is therefore F.*

Table 4.14-23b
Freeway Weaving Levels of Service under 2020 plus Project Conditions

			Cumulative No Project (2020)		Cumulative with Project (2020)	
Segment	Peak Hour		Volume	LOS	Volume	LOS
I-215 NB south of University	AM	Weaving	2,334	F	2,507	F
	PM		1,823	E	2,037	F
I-215 NB north of University	AM	Weaving	1,923	F	1,981	F
	PM		1,557	D	1,737	E
I-215 SB south of University	AM	Weaving	1,737	E	1,860	E
	PM		3,305	F	3,508	F
I-215 SB north of University	AM	Weaving	1,310	C	1,446	D
	PM		1,946	F	2,166	F

Source: Fehr & Peers, 2011

Mitigation Measures: No mitigation measures for the freeway facilities impacted by the amended 2005 LRDP are feasible for the following reasons:

- In many instances, the freeway segments identified above are currently "built-out" and there are no plans to widen or improve these freeway segments. For example, no programmed or funded improvements to widen I-215 beyond its current configuration, where a majority of these impacts were identified, are available.

- There have been recent improvements to I-215, SR-60, and SR-91, particularly at the interchange where the three freeways converge, which further preclude additional improvements beyond what was previously built.

- Those freeways where future improvements are being considered and planned, such as portions of the SR-91 through downtown Riverside, are outside of the study area.

- The cost and scale of freeway expansion is beyond the capacity of UCR or any other single project to fund and complete on its own.

Significance after Mitigation: The impact would therefore be significant and unavoidable.

Impact 4.14-7 **Implementation of the proposed 2005 LRDP Amendment 2 would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under existing conditions. The impact would be significant.**

Impact 4.14-6 above presents the effects of campus traffic at full development under the amended 2005 LRDP, which is for purposes of this EIR assumed to occur by 2020. As all of the additional vehicle trips generated under the amended 2005 LRDP are not expected to be added to the study area transportation network immediately following approval of the proposed amendment, an analysis of impacts from imposing all of the project trips on existing conditions is an unrealistic analysis. Nonetheless in light of the recent Sunnyvale decision, such an analysis was conducted that evaluated the proposed project's traffic impacts on roadways under existing plus project conditions. As this is an unrealistic scenario, this analysis is included in this EIR for informational purposes only.

The traffic analysis for the Existing Plus Project conditions presents the levels of service at freeway segments that would result from the full implementation of the 2005 LRDP Amendment 2 if it were built out under current conditions (2010 conditions). The proposed SOM would increase campus trips by approximately 3,826 during the AM peak hour and 6,070 during the PM peak hour, as shown in **Table 4.14-10**. In addition, the proposed SOM would increase campus trips by approximately 2,230 during the mid-day peak hour, as shown in **Table 4.14-11**. The rest of the development on the campus under the 2005 LRDP would result in approximately 1,168 vehicle trips during the AM, PM, and mid-day peak hours, as shown in **Table 4.14-10** and **Table 4.14-11**.

The increase in the number of campus-related peak hour trips would increase traffic volumes on the local freeways, thus degrading traffic conditions along some freeway segments if applied to existing conditions. **Table 4.14-24, Freeway Levels of Service – Existing Plus Project AM and PM Peak Hour,**

presents the freeway segment level of service for the AM and PM peak hour and also reports the volume-to-capacity ratio during the peak hours.

Table 4.14-24
Freeway Levels of Service – Existing Plus Project AM and PM Peak Hour

		Existing Conditions			Existing Plus Project Conditions			
Freeway Segment	Peak Hour	Volume	LOS	V/C	Volume	LOS	V/C	Change V/C
I-215 NB, s/o 60	AM	7,066	D	0.79	7,635	D	0.85	0.06
	PM	6,636	C	0.74	7,206	D	0.80	0.06
I-215 SB, s/o 60	AM	5,894	D	0.79	6,225	D	0.83	0.05
	PM	5,921	D	0.79	6,817	D	0.91	0.12
I-215 NB, b/w 60 & Central	AM	7,455	E	0.99	**8,024**	**F(0)**	**1.07**	**0.08**
	PM	6,625	D	0.88	7,195	E	0.96	0.08
I-215 SB, b/w 60 & Central	AM	3,602	A	0.30	3,933	A	0.33	0.03
	PM	7,212	C	0.60	8,108	C	0.67	0.07
I-215 NB, b/w Central & MLK	AM	8,356	D	0.93	8,925	E	0.99	0.06
	PM	6,949	D	0.77	7,519	D	0.83	0.06
I-215 SB, b/w Central & MLK	AM	4,702	B	0.49	5,033	B	0.53	0.04
	PM	8,403	D	0.88	9,299	E	0.98	0.09
I-215 NB, b/w MLK & University	AM	7,132	E	0.95	**7,698**	**F(0)**	**1.02**	**0.07**
	PM	5,919	D	0.79	6,411	D	0.85	0.07
I-215 SB, b/w MLK & University	AM	5,779	C	0.61	6,073	C	0.64	0.03
	PM	**10,667**	**F(0)**	**1.12**	**11,452**	**F(0)**	**1.20**	**0.08**
I-215 NB, b/w University & 3rd	AM	7,874	D	0.87	7,977	D	0.89	0.01
	PM	6,133	C	0.68	6,671	C	0.74	0.06
I-215 SB, b/w University & 3rd	AM	4,063	C	0.54	4,214	C	0.56	0.02
	PM	6,020	D	0.80	6,284	D	0.84	0.04
I-215 NB, b/w 3rd & Spruce	AM	7,980	C	0.73	8,097	C	0.74	0.01
	PM	5,794	B	0.53	6,386	C	0.58	0.05
I-215 SB, b/w 3rd & Spruce	AM	4,633	C	0.62	4,769	C	0.64	0.02
	PM	6,386	D	0.85	6,473	D	0.86	0.01
I-215 NB, n/o 91/60	AM	6,008	C	0.75	6,092	C	0.76	0.01
	PM	5,073	C	0.63	5,471	C	0.68	0.05
I-215 SB, n/o 91/60	AM	5,598	C	0.70	5,734	C	0.72	0.02
	PM	5,235	C	0.65	5,322	C	0.66	0.01
60 EB, e/o 215	AM	4,633	C	0.62	4,666	C	0.62	0.00
	PM	6,586	D	0.88	6,781	D	0.90	0.03
60 WB, e/o 215	AM	7,384	C	0.67	7,384	C	0.67	0.00
	PM	6,541	C	0.59	6,541	C	0.59	0.00
60 EB, w/o 91/215	AM	5,598	C	0.75	5,631	C	0.75	0.00
	PM	5,235	C	0.70	5,430	C	0.72	0.03
60 WB, w/o 91/215	AM	6,008	C	0.75	6,008	C	0.75	0.00
	PM	5,073	C	0.63	5,073	C	0.63	0.00

		Existing Conditions			Existing Plus Project Conditions			
Freeway Segment	Peak Hour	Volume	LOS	V/C	Volume	LOS	V/C	Change V/C
91 EB, w/o 215/60	AM	5,186	C	0.69	5,219	C	0.70	0.00
	PM	4,229	C	0.56	4,424	C	0.59	0.03
91 WB, w/o 215/60	AM	6,683	C	0.70	6,683	C	0.70	0.00
	PM	6,210	C	0.65	6,210	C	0.65	0.00

Source: Fehr & Peers, 2011

As shown in **Table 4.14-24**, the operating conditions of all freeway segments operating unacceptably under 2020 No Project conditions would continue to do so with the addition of project traffic. In addition I-215 Northbound, between SR-60 and Central, and I-215 Northbound, between MLK and University, would drop from LOS E to LOS F in the AM peak hour with the addition of project traffic.

In addition to freeway level of service analysis reported above, an analysis of the level of service of the freeway merge/diverge sections at the SR-60/Central Avenue interchange and an analysis of the level of service of the freeway weaving section at the I-215/University Avenue interchange was completed for the proposed project. **Tables 4.14-24a** and **4.14-24b** report the results of the analysis. Similar to the results of the freeway mainline analysis, the merge/diverge and weaving analyses show that these facilities would operate at unacceptable levels of service under existing conditions, both with and without the addition of project traffic.

Table 4.14-24a
Freeway Merge/Diverge Levels of Service under Existing plus Project Conditions

			Existing (2010)		Existing Plus Project (2010)	
Segment	Peak Hour	Analysis Type	Density (pc/ln/mi)	LOS	Density (pc/ln/mi)	LOS
SR-60 NB south of Central	AM	Major Diverge	N/A [1]	F	N/A [1]	F
	PM		20.6	C	N/A [1]	F
SR-60 NB north of Central	AM	Basic	N/A [1]	F	N/A [1]	F
	PM		N/A [1]	F	N/A [1]	F
SR-60 SB south of Central	AM	Basic	12.6	B	13.5	B
	PM		34	D	42.7	E
SR-60 SB north of Central	AM	Diverge	22.8	C	23.9	C
	PM		N/A [1]	F	N/A [1]	F

Source: Fehr & Peers, 2011
[1] *Volume sufficiently high that density exceeds allowable threshold, LOS is therefore F.*

Table 4.14-24b
Freeway Weaving Levels of Service under Existing plus Project Conditions

Segment	Peak Hour		Existing (2010)		Existing Plus Project (2010)	
			Volume	LOS	Volume	LOS
I-215 NB south of University	AM	Weaving	1,860	E	2,235	F
	PM		1,528	D	1,715	E
I-215 NB north of University	AM	Weaving	1,633	D	1,701	E
	PM		1,304	C	1,499	D
I-215 SB south of University	AM	Weaving	1,486	D	1,567	D
	PM		2,849	F	3,044	F
I-215 SB north of University	AM	Weaving	1,094	B	1,242	C
	PM		1,649	E	1,865	E

Source: Fehr & Peers, 2011

Mitigation Measures: For the reasons presented under **Impact 4.14-6** above, no feasible mitigation measures are available to address the proposed project's impacts on the freeway facilities.

Significance after Mitigation: The impact would be significant and unavoidable.

Impact 4.14-8 **Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would not result in hazards due to design features or land use incompatibilities. The impact would be less than significant.**

New buildings and parking facilities would be constructed, and new roadway segments developed on the campus under the 2005 LRDP as amended by the proposed 2005 LRDP Amendment 2.

It is anticipated that any new roadway segments and driveways proposed on the campus would employ the use of standard engineering practices (e.g., use of standard road and driveway widths, provision of adequate sight lines, and avoidance of sharp turning radii) and traffic mitigation strategies (e.g., installation of control devices such as stop signs or signal lights as needed) to avoid design elements that could result in hazards due to features such as sharp curves or dangerous intersections. Furthermore, during the planning horizon of the amended 2005 LRDP, UCR will continue implementation as applicable of the following existing campus Program and Practice (PP) related to parking and roadway design and is assumed as part of the proposed project.

PP 4.14-4 The Campus shall provide design professionals for roadway and parking improvements with the Campus Design Guidelines and instructions to implement those elements of the guidelines relevant to parking and roadway design.

In addition, as discussed in **Impact 4.9-1** (in **Section 4.9, Land Use and Planning**) implementation of the 2005 LRDP Amendment 2, including the proposed SOM, would not result in land use incompatibilities with either on-campus or off-campus land uses, with implementation of the identified LRDP Planning Strategies and continued implementation of existing campus Programs and Practices. Thus, no traffic hazards related to land use incompatibilities related to new development or redevelopment would result.

As discussed more fully in **Section 4.2, Agricultural Resources**, implementation of the 2005 LRDP Amendment 2 would further reduce the amount of agricultural teaching and research fields on the West Campus by an additional 37.3 acres. LRDP PS Land Use 3, described more fully in **Section 4.2**, would maintain the teaching and research fields south of MLK. As agricultural operations would be concentrated on the West Campus south of MLK, the potential for traffic hazards associated with the continued use of farm equipment would be reduced.

With implementation of the LRDP Planning Strategies and continued implementation of an existing campus Program and Practice, implementation of the proposed project would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment), and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.14-9 **Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would not result in short-term vehicular hazards due to closure of traffic lanes or roadway segments. The impact would be less than significant.**

Construction activities on the campus under the amended 2005 LRDP, including the construction of the proposed SOM, could result in temporary closure of traffic lanes or roadway segments to permit the delivery of construction materials or to provide adequate site access. The reduction of roadway capacity, the narrowing of traffic lanes, and the occasional interruption of traffic flow on streets, could pose hazards to vehicular traffic due to localized traffic congestion, decreased turning radii, or the condition of roadway surfaces. However, UCR would continue to implement as applicable PP 4.14-4 (see above) and the following campus Program and Practice (PP) related to temporary roadway closures during the planning horizon of the amended 2005 LRDP. Both of these Programs and Practices are assumed as part of the proposed project.

PP 4.14-5 To the extent feasible, the Campus shall maintain at least one unobstructed lane in both directions on campus roadways. At any time only a single lane is available, the Campus shall provide a temporary traffic signal, signal carriers (i.e., flagpersons), or other appropriate traffic controls to allow travel in both directions. If construction activities require the complete closure of a roadway segment, the Campus shall provide alternate routes and appropriate signage.

Continued implementation of existing campus PP 4.14-5 would ensure that impacts associated with construction-related traffic lane or roadway closures would remain less than significant by either maintaining at least one lane of travel on affected roadways during construction activities and/or by providing alternate routes and appropriate signage. This impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.14-10 Construction associated with the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would not substantially increase pedestrian hazards due to closure of sidewalks or paths. The impact would be less than significant.

Construction activities associated with implementation of the amended 2005 LRDP, including the SOM, could result in temporary closure of on-campus pedestrian sidewalks and paths or the provision of temporary pedestrian routes on the campus. The arrival or departure of construction vehicles and delivery of construction materials could intermittently disrupt pedestrian travel along pedestrian routes adjacent to construction sites. However, UCR would continue to implement as applicable the following existing campus Program and Practice (PP) related to pedestrian route closures during the planning horizon of the amended 2005 LRDP and is assumed as part of the proposed project.

PP 4.14-6 For any construction-related closure of pedestrian routes, the Campus shall provide alternate routes and appropriate signage and provide curb cuts and street crossings to assure alternate routes are accessible.

Continued implementation of PP 4.14-6 would ensure that alternative pedestrian routes and appropriate signage would be provided. With continued implementation of the existing campus Programs and Practices, construction activities during implementation of the proposed 2005 LRDP Amendment 2 would not substantially increase pedestrian hazards due to closure of sidewalks and paths, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.14-11 **Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant 2005 LRDP Planning Strategy, would not impair emergency access in the long-term. The impact would be less than significant.**

New buildings, parking facilities and new roadway segments would be developed on the campus under the amended 2005 LRDP, thus requiring emergency access. However, during the planning horizon of the amended 2005 LRDP, future development of the campus would be guided as applicable by a range of LRDP Planning Strategies (PS), including LRDP PS Transportation 4, described above under **Impact 4.14-1**, to limit general vehicular circulation in the central campus, but allow transit, service, and emergency vehicle access and is assumed as part of the proposed project.

The issue of emergency vehicle access considers both the regional accessibility of the project site and access within the site itself. From a regional perspective, the accessibility for emergency vehicles is more than adequate. Emergency vehicles can access the campus via roadways such as I-215 and University Avenue from each of the cardinal directions. Once emergency vehicles have traveled to the project site, the internal roadway network is adequate to allow these vehicles to reach their designated locations.

With implementation of the identified LRDP Planning Strategy, implementation of the amended 2005 LRDP would not result in inadequate emergency access in the long term, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.14-12 **Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, would not impair emergency access during the short-term. The impact would be less than significant.**

Construction activities associated with implementation of the amended 2005 LRDP, including the construction of the SOM, could require temporary closure of traffic lanes or roadway segments, which could result in impaired emergency access in the short-term. However, UCR would continue to implement as applicable the existing campus PP 4.14-5, described above under **Impact 4.14-6**, and the following Program and Practice (PP) which is relevant to temporary road closures during the planning horizon of the amended 2005 LRDP. Both of these Programs and Practices are assumed as part of the proposed project.

PP 4.14-8 To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, the Office of Architects and Engineers shall consult with the UCPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes.

Continued implementation as applicable of PP 4.14-5 and PP 4.14-8 to preserve a single traffic lane on campus roadways whenever feasible, and consultation with emergency service providers regarding roadway closures would ensure that emergency access remains relatively unimpeded. This impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.14-13 Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would not substantially increase demand for public transit. The impact would be less than significant.

Implementation of the proposed 2005 LRDP Amendment 2 would result in additional vehicle trips beyond those evaluated in the 2005 LRDP EIR. In addition, the proposed Amendment 2 to the 2005 LRDP would also increase demand for public transit.

As discussed above under **Impact 4.14-1**, during the planning horizon of the proposed 2005 LRDP Amendment 2, future development of the campus would be guided by a range of LRDP Planning Strategies (PS), including Transportation 1 (develop an integrated multi-modal transportation plan to encourage walking, biking and transit use). In addition, the Campus would continue to implement as applicable existing campus PP 4.14-1, which requires to Campus to continue to implement a Transportation Demand Management program that meets or exceeds all trip reduction and AVR requirements of the SCAQMD. These measures would encourage transit use, and could increase demand for public transit. Both the Planning Strategy and Program and Practice are assumed as part of the proposed project.

The campus is served by 11 RTA routes currently and works cooperatively with RTA to provide transit to on-campus and to off-campus sites as well. Given this extensive service, it is anticipated that at there will be sufficient transit service to accommodate growth on campus. In addition, UCR proposes to take additional measures to provide transit access to the proposed SOM, including adjusting current bus and/or provide shuttle schedules and routes as needed for the proposed SOM and anticipates extending the current UPASS system to include medical school students, faculty and staff. This impact would be less than significant.

Mitigation Measures: No mitigation is required.

4.14.4.6 Cumulative Impacts and Mitigation Measures

Subsection 4.14.4.5, Project Impacts and Mitigation Measures, above, evaluates the potential traffic impacts from campus development under the 2005 LRDP as amended by the proposed Amendment 2 in terms of the increased traffic along roadways used by the campus-related population to access the site, and the impacts of this traffic on roadway intersections. To present the full impacts from the development of the entire campus, the analysis presents the effects from buildout of the campus and its vicinity in the year 2020.

Impacts 4.14-1, 4.14-3, and **4.14-5** evaluate the traffic that would result from growth in regional traffic through 2020 combined with growth remaining under the 2005 LRDP and additional growth from the proposed 2005 LRDP Amendment 2. That analysis therefore presents the cumulative traffic impacts that were determined to be significant at certain intersections and freeway segments and less than significant for roadway segments. Mitigation measures are included to address the proposed project's contribution to the significant cumulative traffic impacts. However, because implementation of the intersection improvements determined necessary to reduce the project's impacts on off-campus intersections is outside the control of the University, **Impact 4.14-1** is found to be significant and unavoidable for 17 intersections. Furthermore, because improvements to existing freeway segments are not feasible, **Impact 4.14-5** is found to be significant and unavoidable for eight freeway segments.

4.14.5 REFERENCES

Fehr & Peers. 2011. Traffic Analysis for University of California – Riverside LRDP Amendment #2 EIR

City of Riverside. 2007. City of Riverside 2025 General Plan, November.

County of Riverside. 2003. County of Riverside General Plan, October.

Riverside County Transportation Commission, 2010. Riverside County Congestion Management Plan, March.

4.15 UTILITIES

4.15.1 INTRODUCTION

This section of the EIR describes the utilities and service systems that serve the UCR campus, including domestic water supply, wastewater, solid waste disposal, electricity, and natural gas, and evaluates the potential for impacts related to utilities and services systems due to campus development under the 2005 LRDP as amended by the proposed Amendment 2.

This section is based upon information provided by utility service providers, who were contacted to obtain information regarding available service levels and current or anticipated constraints to serve the development that could occur under the 2005 LRDP as amended. Previous environmental documentation prepared for the UCR campus, including the 2005 LRDP EIR, was also used in the preparation of this section. EIRs prepared for the City of Riverside 2025 General Plan and the City of Riverside's Integrated Master Plan for Wastewater Collection and Treatment Facilities were also used in the analysis of project level and cumulative impacts and both EIRs are incorporated by reference into this EIR. Bibliographic entries for reference materials appear in **Section 4.15.5** (**References**) of this section.

In response to the Notice of Preparation for this EIR, the City of Riverside noted that the Campus would be required to pay the City's Sewer Capacity Charge in accordance with the current fee schedule, prior to building occupancy. This EIR is a program level EIR that looks at the environmental effects from the buildout of the campus under the amended 2005 LRDP. The EIR does not evaluate any specific building project. Furthermore, if additional sewer capacity is needed to serve the campus, UCR will work with the City of Riverside pursuant to Government Code 54999 et seq. to negotiate a payment proportional to the University's share of improvements to provide sufficient capacity. No other public or agency comments related to utilities were received.

4.15.2 EXISTING CONDITIONS

4.15.2.1 Domestic Water

The City of Riverside Public Utilities Department (RPU) supplies domestic water to UCR. RPU's water supply consists primarily of groundwater from the Bunker Hill Basin, Riverside North, and Riverside South. Additional sources of water available to the RPU include groundwater from the Rialto-Colton Basin, recycled water from the City of Riverside Regional Water Quality Control Plant (RRWQCP), and imported water from the Western Municipal Water District (WMWD) through a connection at the Metropolitan Water District of Southern California's (MWD) Henry J. Mills Treatment Plant (Riverside 2011).

In 2008-2009, Riverside met 100 percent of its water needs from underground resources. The water conveyance system consists of 1,002 miles of pipelines, 14 miles of canals, and 15 active reservoirs. Total reservoir capacity is 79.99 million gallons. RPU currently operates seven water treatment plants. Daily average production is 62.3 million gallons, with peak day production of 98.0 million gallons and a historical peak day production of 118.8 million gallons (Riverside 2010b).

RPU plans to augment its existing water supplies through three conjunctive use projects: Seven Oaks Dam Conservation Project, Riverside North Aquifer Storage and Recovery Project, and Pellisier Ranch Aquifer Storage and Recovery Project and through increased use of recycled water (Riverside 2011).

All existing and planned water supply entitlements, water rights, and/or water service contracts that may be used to serve development associated with the 2005 LRDP as amended are set forth in the latest City of Riverside Urban Water Management Plan (UWMP) prepared by the RPU in 2010, and summarized in **Table 4.15-1, Existing, Planned and Available Water Supplies**, below.

Table 4.15-1
Existing, Planned and Available Water Supplies
(Acre-feet per year)

Water Supply Sources	2015	2020	2025	2030	2035
Existing					
Groundwater (Bunker Hill Basin)	53,426	53,426	53,426	53,426	53,426
Groundwater (Rialto-Colton Basin)	2,700	2,700	2,700	2,700	2,700
Groundwater (Riverside North)	13,500	13,500	13,500	13,500	13,500
Groundwater (Riverside South)	28,600	28,600	28,600	28,600	28,600
Total Existing Supplies	*98,226*	*98,226*	*98,226*	*98,226*	*98,226*
Planned					
Seven Oaks Dam Conservation Storage (Phase 1)	2,000	4,000	4,000	4,000	4,000
Riverside North Aquifer Storage and Recovery	3,500	3,500	3,500	3,500	3,500
Pellissier Ranch Aquifer Storage and Recovery [1]	0	10,000	10,000	10,000	10,000
Recycled Water (RWQCP)	3,650	5,800	5,800	5,800	5,800
Total Planned Supplies	*9,150*	*23,300*	*23,300*	*23,300*	*23,300*
Available Supplies					
Imported Water (MWD via WMWD)	21,700	21,700	21,700	21,700	21,700
Total	**129,076**	**143,226**	**143,226**	**143,226**	**143,226**

Source: City of Riverside Urban Water Management Plan, 2010

1 The Pellisier Ranch Aquifer Storage and Recovery Project includes 6,000 afy of groundwater and stormwater recharge, and 4,000 afy of recycled water recharge.

In 2010, demand for water within the RPU's service area was down to approximately 83,300 acre-feet per year (afy) from about 94,500 afy in 2005, as summarized in **Table 4.15-2, Projected Water Demand**, below. By 2035, RPU's water demand is projected to reach about 120,000 afy (Riverside 2011).

Table 4.15-2
Projected Water Demand
(Acre-feet per year)

Water Demand	2005	2010	2015	2020	2025	2030	2035
Retail [1]	64,695	58,861	71,850	76,800	80,900	85,300	88,200
Wholesale	14,030	13,071	14,500	15,500	15,500	15,500	15,500
Additional Water Uses and Losses	15,785	11,326	11,700	15,100	15,400	15,800	16,100
Total Water Demand [2]	**94,510**	**83,257**	**98,050**	**107,400**	**111,800**	**116,600**	**119,800**

Source: City of Riverside Urban Water Management Plan, 2010
Retail water deliveries include recycled water used for direct use.
Total water demand includes potable water wheeled to WMWD.

Campus Water System

The domestic water system at UCR consists of an underground distribution system, a pumping system, storage tanks, and connections to the City of Riverside's municipal water distribution system. The system on the East Campus is connected to the West Campus via the municipal system and a water line under the freeway that connects to Parking Lot No. 30 and the Agricultural Operations facility (UCR 2005).

Domestic water supply to the East Campus is provided via the City of Riverside's 5-million-gallon reservoir located south of University Avenue, just east of the I-215/SR-60 freeway. Water from this reservoir is pumped via a below-grade pumping station into the campus distribution system and two campus-owned storage tanks (one 1-million-gallon capacity and one 50,000-gallon capacity) in the southeast hills. These tanks are approximately 200 feet above the East Campus mean elevation, and provide storage for peak-hour and fire-fighting water demands. A second connection to the municipal distribution system, located at the intersection of Linden and Florida Streets, is only used for emergency fire protection and as a fail-safe backup to the 5-million-gallon reservoir connection (UCR 2005).

Domestic water is provided to the West Campus via connections to existing municipal water lines running east/west in University Avenue, Everton Place, and Martin Luther King Boulevard, Jr. (MLK), and north/south lines in Chicago Avenue, Iowa Avenue, and the Cranford Avenue street alignment (UCR 2005).

UCR also has rights to potable water in the Gage Canal, which is used to irrigate the agricultural teaching and research fields via 12-inch and 8-inch distribution lines from the canal. The Campus also has a right to purchase "extra" water from the Gage Canal, which is occasionally used to supplement the irrigation of the agricultural teaching and research fields. The Campus also has groundwater rights; however, these rights are currently not exercised (UCR 2005).

Campus Water Demand

Current daily domestic water consumption for both the East and West Campus is approximately 2.5 million gallons per day (mgd). Approximately 40 percent of the total campus water consumption (1.0 mgd) is attributed to indoor use, including residential, instruction and research space, steam boilers and cooling towers, chillers, food facilities, restrooms, custodial uses, showers, and drinking fountains. The remaining 60 percent (1.5 mgd) is used for landscape irrigation (not including the agricultural teaching and research fields, which are irrigated with water from the Gage Canal) (UCR 2005).

4.15.2.2 Wastewater

The Sewerage Systems Services Program and its Treatment Services unit, administered by the RPU, collects, treats, and disposes of all wastewater generated within the City of Riverside and is responsible for compliance with State and federal requirements governing the treatment and discharge of wastewater. The system provides primary, secondary, and tertiary treatment of wastewater from the City of Riverside, as well as from the Jurupa, Rubidoux, and Edgemont Community Services Districts (UCR 2005).

The wastewater collection system includes over 1,100 miles of gravity sewers ranging in size from 6 inches to 48 inches in diameter. The system also includes 18 wastewater pump stations, three of which are stormwater pump stations. Most of the wastewater lift stations are designed for flows of 100 to 400 gallons per minute (gpm). There are two large lift stations with design capacities in excess of 2,000 gpm. The three stormwater pump stations have design capacities of approximately 500 gpm each (UCR 2005).

Treatment Services is responsible for providing the effective treatment of all domestic and industrial wastewater generated in its service area, including the UCR campus. This entails the continuous efficient operation of the primary, secondary, and tertiary treatment plants to produce treated effluent that complies with State and federal requirements. The City of Riverside RRWQCP provides treatment of all campus-generated wastewater, with UCR operating its own collection system that connects to the City's system. The RRWQCP currently treats 33 mgd and has a capacity of 40 mgd. There are plans to increase the treatment capacity of the RRWQCP to 46 mgd. The expansion is in the final design stage with

construction expected to begin in the 1st quarter of 2012. The expansion is identified in the City's Capital Improvement Plan for Fiscal Year 2011/12 (Young 2011).

The City's Integrated Wastewater Master Plan (IWWMP) was prepared in 2008 to enable the RRWQCP to continue to reliably provide wastewater treatment to the City as the wastewater flow increases due to the projected population growth. The master plan addresses facility needs for projected influent flow through the year 2025 and identifies improvements that would increase the capacity of the RRWQCP up to 52.2 mgd. As stated in the IWWMP, the increase in the plant flow is anticipated to grow at a rate of 1.09 percent between 2006 and 2025. Because flow projection is not an exact science, a 90-percent confidence interval for the flow was developed. This provides an increase range of between 0.75 percent (low growth scenario) and 1.5 percent (high growth scenario). The 1.5 percent rate increase was used by the City to project the year 2025 flow. This resulted in a projected average daily flow (ADF) of 52.2 mgd (Riverside 2008). All of the analyses for the facilities were performed assuming they would need to meet the 52.2 mgd capacity. After the analyses were performed, the City noticed a slow-down in the population/housing growth, and decided the low growth scenario would be more appropriate for scheduling projects and determining user rates and connection fees. As a result, although the IWWMP analyses are based on a 2025 flow of 52.2 mgd, at this time the City is planning to expand the facility only to 46 mgd.

Campus Wastewater Generation

Wastewater generation on the East Campus is currently estimated at 1.1 mgd and on the West Campus is estimated at less than 0.1 mgd. Wastewater is collected in the sanitary sewer system on campus, which consists of a network of 4-, 6-, and 8-inch-diameter lines owned and maintained by UCR. These underground gravity flow sewer lines are interconnected and flow in a general east to west and southeast to northwest direction to points of connection to sanitary sewer lines owned and maintained by the City of Riverside (UCR 2005).

The West Campus primarily consists of agricultural land and has only two existing sewer lines: one to serve the International Village housing complex and another to serve an Agricultural Operations building south of MLK near the Gage Canal. The University Extension, Human Resources, and Highlander Hall buildings are served from sewer laterals extending from the trunk line in University Avenue (UCR 2005).

A 15-inch City-owned trunk sewer line crosses the East Campus. The East Campus discharges wastewater into this City trunk line. Areas of the City east of the campus also discharge into this line. The City and UCR have a wastewater discharge agreement that allows the Campus to discharge 1.55 cubic

feet per second (cfs) (approximately 1 mgd) into the portion of the City trunk line within the East Campus between Valencia Hills Drive and Canyon Crest Drive (UCR 2005).

4.15.2.3 Stormwater Drainage

The existing storm drain system on the West Campus consists of reinforced concrete pipe ranging in size from 18 to 75 inches in diameter. Storm drains are located under Cranford Avenue (McKinley Avenue), MLK, Chicago Avenue, and an alley south of the extension of Everton Place west of Iowa Avenue. The 18-inch alley storm drain flows in a westerly direction and connects to the storm drain in Cranford Avenue (McKinley Avenue). The storm drain located in Cranford Avenue (McKinley Avenue), ranges from 66 to 72 inches in diameter and flows in a southerly direction. The third storm drain pipe is located in MLK, ranges in size from 42 inches to 75 inches, and flows in a westerly direction. The Cranford Avenue storm drain joins the MLK storm drain at the 75-inch portion of the pipe located at the intersection of Cranford Avenue and MLK. An 18-inch storm drain in Chicago Avenue also connects to the MLK storm drain and flows in a northerly direction. In MLK, the storm drain flows in a westerly direction past Chicago Avenue and outlets to a retention basin to the west (UCR 2005).

The existing storm drain system on the East Campus consists of reinforced concrete pipe ranging in size from 18 to 75 inches in diameter. A 72-inch pipe follows the general alignment of University Avenue through the East Campus and discharges into the Gage Detention Basin north of University Avenue at Canyon Crest. The excess flow from the above ground, man-made channel follows the same alignment overland but discharges into the Glade Detention Basin at Aberdeen Drive. There is an inlet structure at the Glade Detention Basin, which drains into the Gage Detention Basin via a 7-foot underground box culvert across the athletic fields. The Botanical Garden Basin collects additional storm water runoff flows in the southeast corner of the East Campus. The basin connects to the 72-inch storm drain on Big Springs Road and East Campus Drive via a natural channel and 48-inch storm drainpipe (UCR 2005).

4.15.2.4 Solid Waste

The City of Riverside Solid Waste Division is responsible for the collection and handling of residential refuse, recycling, and green waste (compostable organic waste) generated within the City of Riverside. At this time, the La Sierra, University, and Orangecrest areas are served by a private contractor, Burrtec Waste Industries, while establishments throughout the City are served by one of three private contractors: Athens, Burrtec, or CR&R (Paul 2009).

The Robert A. Nelson Transfer Station, located at 1830 Agua Mansa Road, receives refuse from western Riverside County, including the UCR campus. The transfer station is owned by the Riverside County Waste Management Department and operated by Burrtec Waste Industries. The transfer station has a

capacity to transfer up to 4,000 tons of solid waste per day and is currently processing approximately 1,525 tons of solid waste per day (Ross 2011).

The Operations division of the Riverside County Waste Management Department receives, compacts, and buries refuse received at the various landfill sites at several locations in the County. The Badlands Class III landfill is located just east of Moreno Valley at 31125 Ironwood Avenue and is the central disposal site for the north central quarter of the County, in which UCR is located.

At the end of 2010, the Badlands landfill had a total remaining disposal capacity of about 9.0 million tons. The Badlands landfill is permitted to receive a maximum daily tonnage of 4,000 tons, and in 2010, the landfill accepted a daily average volume of 1,667 tons. The Badlands landfill is estimated to close in 2024 (Ross 2011).

Campus Generated Solid Waste

On the UCR campus, trash is collected and placed in containers located throughout the campus. The trash is then collected by UCR using its own truck and taken to a central location for hauling through a contract with Athens to recycle all recyclable waste with the remaining waste hauled to the Robert A. Nelson Transfer Station. During the July 1, 2009, to June 30, 2010 period, a total of 1,995 tons of solid waste were hauled to the Robert A. Nelson Transfer Station. In addition, 2,429 tons of assorted waste were diverted, recycled, or reused by the Campus as shown in **Table 4.15-3, UCR Solid Waste Generation and Recycling**. Thus, approximately 55 percent of the general solid waste stream is diverted, recycled or reused. All landfills in Riverside County are municipal solid waste landfills, which are regulated at the federal, State, and local levels and monitored for compliance. Hazardous waste and industrial wastes are not accepted at these sites.

UCR Solid Waste Minimization

UCR implements a waste/source reduction and recycling program that includes sorting and separation of wastes to simplify the removal of recyclable materials and the expansion of composting procedures associated with landscaping and agriculture to reduce the solid waste flow. In addition, the Campus is carrying out a shift in its procurement practices towards recyclable, second generation, or reusable products to the extent feasible. As mentioned above, from July 1, 2009 to June 30, 2010, approximately 55 percent of solid waste was diverted, recycled, or reused. The Campus has constructed a waste recycling facility on the West Campus where all solid waste generated on the campus will be collected. The collected waste will then be sorted by Athens Services and waste for landfill disposal will be off-hauled by Athens and recyclables will be off-hauled for recycling. The Campus will compost all green wastes on site.

Table 4.15-3
UCR Solid Waste Generation and Recycling
July 1, 2009 – June 30, 2010

Type of Waste	Tons
Hauled to Transfer Station	
Solid Waste	1,995
Recycled, Reused, or Diverted	
Basic Recycling[1]	560
Basic Recycling (other)[2]	12
Organics[3]	1,048
Miscellaneous[4]	586
Household Hazardous Materials[5]	26
Household Hazardous Materials (other)[6]	5
Waste to Energy: Incineration	192
Subtotal	*2,429*
Total	**4,424**

Source: UC Systemwide Waste Reduction 2009-2010: Diversion Data Profile Report
Includes corrugated cardboard, office park/mixed paper, scrap metal, and comingled recyclables (glass, plastics, aluminum, paper, cardboard).
Includes refrigerators and automobiles.
Includes landscape/yard trimmings and food.
Includes construction and demolition waste, pallets, toner cartridges and furniture/office supplies.
Includes universal waste (household batteries, electronics), tires, non-household batteries, and fluorescents.
Includes used motor oil, used anti-freeze, and used air and oil filters.

4.15.2.5 Energy

Electricity

The RPU currently provides electricity to the UCR campus. In 2009-2010, 55 percent of the electricity provided to the City service area was obtained from coal, 15 percent from nuclear power, 16 percent from renewables, less than 1 percent from gas, 1 percent from hydropower, and 12 percent was purchased from third parties.[1] The system consists of 91.1 circuit miles of transmission lines, 1,301 circuit miles of distribution lines, and 14 substations. Production totaled 2,203 million kilowatt-hours (kWh) in 2010. Peak day demand during 2009-2010 was 560 megawatts (MW), with a historical peak of 604 MW (Riverside 2010a).

1 Excludes supply exchanges.

Currently, the Campus uses approximately 124 million kWh of electricity annually (UCR Physical Plant 2011). The energy is received through a 69 kilovolt (kV) line at a substation west of I-215/SR-60. From this point, the power is reduced to a usable voltage and then distributed to individual buildings and transformers. The existing UCR distribution system has been expanded and renovated in the last decade. The sub-station has been enlarged to accommodate two new transformers and associated outdoor switchgear to provide power to the campus at 12 kV. The new City-owned substation is a dual transformer system, with each transformer powered from a different 69 kV utility station. Normally, half of the campus load is served by each transformer through a 12 kV loop distribution system. Should either transformer experience a power failure, the entire campus 12 kV load could be transferred to the transformer remaining in service (UCR 2005). For this reason, the capacity of the substation is 27 mega volt amps (MVA) versus the 54 MVA-installed rating of the two transformers.

An older 5 kV radial system also exists on the East Campus. The 5 kV transformers and switchgear are also located at the substation west of the freeway. Some buildings originally on the 5 kV system have been transitioned to the 12 kV system, but many remain on the 5 kV system. UCR plans to continue the gradual replacement of 5 kV distribution lines and transformers over the next few years in order to transition the entire campus to the 12 kV system (UCR 2005).

Current peak power demands are approximately 7 MVA on the 5 kV system and 18.5 MVA on the 12 kV system, for a total of 25.5 MVA. Since the 5 kV system would transition to 12 kV, the assessment for the forecasted electrical growth on campus would take into account both the existing 5 kV loads as well as existing and proposed loads for the 12 kV system.

Although the substation serving the campus is located just west of the freeway, the West Campus has no electrical infrastructure. Existing campus development along University Avenue and Parking Lot No. 30 are currently served by local City lines. In addition, there are aboveground, 69 kV transmission lines traversing a portion of the West Campus area, which have been proposed to be relocated to an alignment along the freeway, pending agreement between UCR and the RPU (UCR 2005).

Natural Gas

UCR currently uses natural gas for heating and some cooling needs for research and instructional lab purposes. Natural gas is provided to the East Campus by the Southern California Gas Company (SCGC). Currently, demand for natural gas on the campus equates to approximately 13,758 therms per day (Ramasubramanian 2011). A high-pressure gas distribution system owned and maintained by SCGC provides natural gas to the Central Utility Plant, as well as many individual buildings on campus. Separate SCGC gas mains also enter the campus to serve the residence halls in addition to the housing

located in the north area of the East Campus. From the Central Utility Plant, the natural gas is distributed to various buildings on the East Campus through its utility tunnel system and by an underground pipeline system involving three major lines: (1) main line at the campus gas pad, located adjacent to the freeway south of Campus Loop Road; (2) Canyon Crest housing line, located in collector streets; and (3) residence hall line located south of Watkins Drive. Peak capacity of the Central Plant natural gas distribution system is 103,000 pounds per hour. There is no gas service to the undeveloped areas of the West Campus north of MLK, although existing lines in University Avenue serve buildings along University Avenue and International Village student housing. An additional potential point of connection exists south of MLK at Canyon Crest Drive (UCR 2005).

4.15.3 REGULATORY FRAMEWORK

4.15.3.1 Water

Federal

There are no laws at the federal level related to water supply that are relevant to the proposed project.

State

The RPU is responsible for meeting federal and State laws and regulations regarding water supply and water quality. Such regulations include water supply treatment system testing and monitoring, as specified in Title 23, Division 4, Chapter 1, Article 4 of the California Code of Regulations (CCR), and federal regulations promulgated by the Environmental Protection Agency (UCR 2005).

Urban Water Management Planning Act

The Urban Water Management Planning Act (California Water Code, Division 6, Part 2.6, Section 10610 et seq.) was developed due to concerns for potential water supply shortages throughout the State of California. It requires information on water supply reliability and water use efficiency measures. Under the Act, urban water suppliers, including the City of Riverside, are required to develop and implement Urban Water Management Plans to describe their efforts to promote efficient use and management of water resources (UCR 2005).

Senate Bill 610

Senate Bill 610 (SB 610), codified in the Water Code beginning at Section 10910, requires cities and counties to prepare water supply assessments (WSA) for projects that propose to construct more than 500 residential units, or that will use an amount of water equivalent to what would be used by 500 residential

units (UCR 2005). However, SB 610 does not apply to the University of California, a constitutionally established public entity. Regardless, UCR assisted the City in the preparation of a WSA for the 2005 LRDP, and it is contained in Appendix I of Volume II of the 2005 UCR LRDP EIR.

Water Conservation Projects Act

The State of California's requirements for water conservation are codified in the Water Conservation Projects Act of 1985 (Water Code Sections 11950 through 11954), as reflected below (UCR 2005):

> *11952. (a) It is the intent of the Legislature in enacting this chapter to encourage local agencies and private enterprise to implement potential water conservation and reclamation projects….*

Local

There are no local laws related to water supply that are applicable to UCR. However, the Campus complies with the following policies and programs aimed at sustainable development, including minimization of water use on campus.

UC Policy on Sustainable Practices

As with all UC campuses, UCR is required to implement the UC Policy Guidelines for Sustainable Practices (UC Sustainability Policy). The following are specific policies designed to address water conservation.

- For product categories that have Energy Star© rated products available, the Campus will focus its procurement efforts only on products with an Energy Star© rating (e.g., appliances).
- For products and services requiring the use of water, the Campus will give preference to technologies that ensure the efficient use of water resources.

UCR complies with the UC policy. In addition, the Campus has several ongoing programs and policies (PPs) related to water conservation, as described later in this section.

UCR Sustainability Action Plan 2009

UCR recently completed a draft Sustainability Action Plan (SAP) for its campus. The SAP provides a detailed road map to sustainability that builds on the Campus's successes and presents opportunities to develop new initiatives. Recommendations made in the SAP are designed to facilitate the achievement of goals set forth in the UC Sustainability Policy. The following are Short-Term, Intermediate, and Long-Term goals in the SAP designed to address water conservation.

Short-Term Goals

Goal 1: Set a per capita water use goal for 2015

Goal 2: Reduce potable water used to irrigate landscape by 10 percent

Goal 3: Conduct building water audits

Goal 4: Establish minimum flow standards for all water-using fixtures

Goal 5: Pilot high-efficiency and dual flush toilet fixtures

Goal 6: Design an educational component to water conservation efforts

Goal 7: Apply for water rebates through the Save A Buck program

Goal 8: Develop a water efficiency retrofit program

Intermediate Goals

Goal 1: Reduce potable water use per square foot of building space

Goal 2: Reduce potable water used to irrigate landscape by 20 percent

Goal 3: Install sub-metering for irrigation water

Goal 4: Pilot water-saving urinals

Goal 5: Formally adopt water-saving toilet specifications

Goal 6: Demonstrate best practices in landscape water conservation

Goal 7: Commit to a minimum point threshold in the LEED Water Efficiency Credit Category

Goal 8: Pilot gray water technology

Long-Term Goals

Goal 1: Achieve the per capita water use 2015 goal set in the short term goals

Goal 2: Reduce potable water used to irrigate landscape by 50 percent on the East Campus, and irrigate 100 percent of the West Campus with non-potable water

Goal 3: Require water sub-metering in all new construction projects

Goal 4: Expand use of gray water

4.15.3.2 Wastewater

Federal

The major piece of federal legislation dealing with wastewater is the Federal Water Pollution Control Act, which is designed to restore and preserve the integrity of the nation's waters. In addition to the Federal Water Pollution Control Act, other federal environmental laws have a bearing on the location, type, planning, and funding of wastewater treatment facilities. As the provider of wastewater service to the UCR campus, the Sewerage Systems Services Program, administered by the City of Riverside Public Works Department, is responsible for compliance with these regulations (UCR 2005).

State

The quality of effluent that the City of Riverside Regional Water Quality Control Plant can discharge is established by the Santa Ana Regional Water Quality Control Board (SARWQCB) through an NPDES permit that specifies Waste Discharge Requirements (WDRs). Operation of the RRWQCP is subject to regulations set forth by the California Department of Health Services (DHS) and State Water Resources Control Board (SWRCB) (UCR 2005).

4.15.3.3 Stormwater Drainage

Local

City of Riverside

The City of Riverside Public Works Department is responsible for directing the planning, designing, construction, and maintenance of all streets, sewers, and storm drains within the City's jurisdiction. The department is also responsible for enforcement of the municipal codes and advance planning for public works-related projects. The primary goals of the City Engineering Services are to design for transportation, parking, and drainage facilities, and protect private and public improvements from flood damage. This program provides administrative and technical support services; design and construction of the various street, sewer, and storm drain projects undertaken by the City; coordination of the off-site improvements installed by private developers; and long-range planning of Public Works facilities (UCR 2005).

As a State entity, the University of California is not subject to local land use regulations; however, the UCR Campus works with the City of Riverside, as appropriate, to implement drainage improvements and to coordinate efforts related to stormwater quality.

4.15.3.4 Solid Waste

Federal

With the exception of disposal site siting and operational standards, there are no applicable federal laws, regulations, or policies that pertain to solid waste generation (UCR 2005).

State

At the state level, the management of solid waste is governed by regulations established by the California Integrated Waste Management Board (CIWMB), which delegates local permitting, enforcement, and inspection responsibilities to Local Enforcement Agencies. In 1997, some of the regulations adopted by the State Water Quality Control Board pertaining to landfills (Title 23, Chapter 15) were incorporated with CIWMB regulations (Title 14) to form Title 27 of the California Code of Regulations (UCR 2005).

California Integrated Waste Management Act

In 1989, the Legislature adopted the California Integrated Waste Management Act of 1989 (AB 939), which established an integrated waste management hierarchy that consists of the following in order of importance: source reduction, recycling, composting, and land disposal of solid waste. Under the provisions of this statute, the University of California is not subject to the act, but is encouraged to adopt reduction measures similar to local jurisdictions (UCR 2005).

Local

UC Policy on Sustainable Practices

The following are specific policies within the UC Sustainability Policy designed to address solid waste recycling and waste management.

Sustainable Recycling and Waste Management Practices

a. In response to Public Resources Code Section 40196.3 which states that the Regents of the University of California are encouraged to comply with code Chapter 18.5, the "State Agency Integrated Waste Management Plan" and in support of the California Integrated Waste Management Board's goal for a "zero waste California," the University voluntarily adopts the following waste diversion goals:

- 50 percent by June 30, 2008
- 75 percent by June 30, 2012
- Ultimate goal of zero waste by 2020

b. All campuses will develop an Integrated Waste Management Plan (IWMP) and funding mechanism by June 30, 2007.

c. Waste reduction and recycling elements shall be integrated in Green Building Design and Sustainable Operation implementation goals and into campus operations as they are developed.

d. The University will seek to develop funding sources for financing waste reduction projects.

UCR Sustainability Action Plan 2009

The following are Short-Term, Intermediate, and Long-Term goals in the UCR SAP designed to address solid waste recycling and waste management.

Short-Term Goals

Goal 1: Develop a written comprehensive recycling and waste management plan

Goal 2: Develop a marketing program for the recycling and waste management plan

Goal 3: Implement uniform outdoor cluster recycling

Goal 4: Create a recycling webpage as part of the larger UCR sustainability website

Goal 5: Adopt the Environmental Protection Agency's (EPA) Recycling Measurement tool

Goal 6: Develop a construction waste management plan

Goal 7: Require all new construction and renovation projects to divert at least 75 percent of waste from landfill disposal

Goal 8: Create a construction and demolition material hauler/processor database

Goal 9: Create a battery recycling program

Goal 10: Divert 25 percent of food waste

Goal 11: Achieve a 50 percent waste diversion rate by FY08/09

Intermediate Goals

Goal 1: Work with vendors to reduce unnecessary packaging

Goal 2: Perform waste audits for five buildings

Goal 3: Provide support for zero waste events

Goal 4: Establish a toner cartridge take-back program

Goal 5: Divert 90 percent of construction waste

Goal 6: Divert 75 percent of food waste

Goal 7: Achieve a 75 percent waste diversion rate by FY11/12

Long-Term Goals

Goal 1: Require all events to be zero waste

Goal 2: Divert 100 percent of construction waste

Goal 3: Divert 100 percent of food waste

Goal 4: Achieve zero waste by 2020

4.15.3.5 Energy

Federal

No federal policies related to energy would apply to the proposed project.

State

California Code of Regulations Title 24

New buildings in California are required to conform to energy conservation standards specified in Title 24 of the California Code of Regulations (CCR). The standards establish "energy budgets" for different types of residential and nonresidential buildings, with which all new buildings must comply. The energy budget has a space-conditioning component and a water-heating component, both expressed in terms of

energy (BTU) consumed per year. The regulations allow for trade-offs within and between the components to meet the overall budget (UCR 2005).

Energy consumption of new buildings in California is regulated by the State Building Energy Efficiency Standards, embodied in Title 24 of the CCR. The efficiency standards apply to new construction of both residential and nonresidential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building or individual agency permit and approval processes (UCR 2005).

Local

UC Policy on Sustainable Practices

The following are specific policies within the UC Sustainability Policy designed to address energy conservation.

Green Building Design

a. Given the importance of energy efficiency to Green Building design, the University of California has set a goal for all new building projects, other than acute-care facilities, to outperform the required provisions of the California Energy Code (Title 24) energy-efficiency standards by at least 20 percent. Standards for energy efficiency for acute care facilities will be developed in consultation with campuses and medical centers.

d. Given the importance of specifically addressing sustainability in laboratory facilities, the University of California will design and build all new laboratory buildings to a minimum standard equivalent to a LEED™ "Certified" rating and the Laboratories for the 21st Century (Labs21) Environmental Performance Criteria (EPC), as appropriate. The design process will include attention to energy efficiency for systems not addressed by the California Energy Code (Title 24).

Clean Energy Standard

a. The University of California will implement a systemwide portfolio approach to reduce consumption of non-renewable energy. The portfolio will include a combination of energy efficiency projects, the incorporation of local renewable power measures for existing and new facilities, green power purchases from the electrical grid, and other energy measures with equivalent demonstrable effect on the environment and reduction in fossil fuel usage. The appropriate mix of measures to be adopted within the portfolio will be determined by each campus. Since each campus' capacity to adopt these measures is driven by technological and economic factors, the campus will need to reevaluate its energy measures mix on a regular basis. The portfolio approach will provide valuable analytical information for improving energy efficiency, resulting in an overall improvement in the University of California's impact on the environment and reduced reliance on fossil fuels during the next decade of capital program growth.

b. The University of California will strive to achieve a level of grid-provided electricity purchases from renewable sources that will be similar to the State's Renewable Portfolio Standard, which sets a goal of procuring 20 percent of its electricity needs from renewable sources by 2010.

c. With a goal of providing up to 10 megawatts of local renewable power by 2014, the University of California will develop a strategic plan for siting renewable power projects in existing and new facilities throughout the 10 UC campuses. The plan will include demonstration projects for photovoltaic systems and other renewable energy systems, such as landfill gas fueled electricity generation or thermal energy production. The strategic plan will include criteria for evaluating the feasibility of a variety of projects, such as incorporating photovoltaic systems in replacement roofing projects and in new buildings, as well as forecasting the accommodations necessary for eventual installation of photovoltaic systems. The University of California will assess the progress of renewable energy technology improvements, both in terms of cost and technical efficiency. To achieve the renewable power goal, the University will maximize the use of available subsidies and negotiate pricing reductions in the marketplace, and will develop funding sources for financing the costs of renewable energy measures.

d. With a goal of reducing systemwide non-renewable energy consumption, the University will develop a strategic plan for implementing energy efficiency projects for existing buildings and infrastructure to include operational changes and the integration of best practices. The University will monitor industry progress in energy retrofits and implement technical improvements as they become available. As with renewable energy projects, the University will develop funding sources and establish a program for financing retrofit projects. The initial goal for energy efficiency retrofit projects will be to reduce systemwide growth-adjusted energy consumption by 10 percent or more by 2014 from the year 2000 base consumption level. The University will strive to achieve even greater savings as additional potential is identified and funding becomes available.

e. The University will continuously evaluate the feasibility of other energy-saving measures with equivalent demonstrable effect on the environment and reduction in fossil fuel usage. In particular, campuses will strive to implement the Sustainable Transportation Practices.

f. The University will develop a variety of funding sources and financing alternatives for energy efficiency, renewable energy, and clean energy projects that will enable campuses to be flexible in addressing their energy needs.

g. The University will pursue marketing of emissions credits as a means to bridge the cost-feasibility gap for green power projects.

UCR Sustainability Action Plan 2009

The following are Short-Term, Intermediate, and Long-Term goals in the UCR SAP designed to address energy conservation.

Short-Term Goals

Goal 1: Hire an Energy and Utilities Manager

Goal 2: Require all new construction projects to surpass California Energy Code Title 24 by 30 percent or better

Goal 3: Assemble a Climate Neutrality team responsible for managing implementation of the Climate Action Plan

Goal 4: Perform monitoring-based commissioning (MBCx) on 10 state-funded buildings

Goal 5: Implement heat recovery projects in six State-funded buildings

Goal 6: Launch fume hood sash management campaign

Goal 7: Procure 20 percent of electricity from renewable sources by 2010 per UC policy

Goal 8: Increase campus participation with the UC Systemwide Sustainability Working Group for Climate Change

Goal 9: Participate in the UC Energy Manager's monthly conference call

Goal 10: Involve UCR alumni in renewable energy installations

Goal 11: Develop a reference resource for energy efficiency incentives

Intermediate Goals

Goal 1: Perform monitoring-based commissioning on the six remaining state-funded buildings identified in the SEP

Goal 2: Increase on-site renewable energy capacity to one megawatt (MW) by 2014

Goal 3: Purchase renewable geothermal power

Goal 4: Investigate energy-saving information technology (IT) projects

Goal 5: Require that eligible projects utilize the Savings by Design and Labs 21 programs

Goal 6: Develop behavioral/education programs that promote energy conservation

Goal 7: Develop and implement a campus standard retro-commissioning (RCx) protocol

Goal 8: Pursue funding from the University of California/California State University/Investor-Owned Utility (UC/CSU/IOU) Energy Efficiency Partnership Program

Goal 9: Reduce greenhouse gas emissions to 2000 levels by 2014

Goal 10: Revise the Climate Action Plan

Long-Term Goals

Goal 1: Complete monitoring-based commissioning on all buildings that are not State funded

Goal 2: Develop student residence hall energy competitions

Goal 3: Develop energy intensity standards for the campus's major space usage types

Goal 4: Adopt a consistent integrative approach to project delivery

Goal 5: Investigate emerging technologies

Goal 6: Establish a climate-friendly investing policy

Goal 7: Reduce greenhouse gas emissions to 1990 levels by 2020

4.15.4 IMPACTS AND MITIGATION MEASURES

4.15.4.1 Significance Criteria

The impacts on utilities from the implementation of the 2005 LRDP Amendment 2 would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

Water Supply

- Require or result in the construction of new water treatment facilities or expansion of existing facilities, which could cause significant environmental effects
- Result in the need for new or expanded water supply entitlements if there are not sufficient water supplies to serve the project from existing entitlements and resources

Wastewater

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board
- Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- Result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments

Stormwater

- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects

Solid Waste

- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs
- Fail to comply with applicable federal, State, and local statutes and regulations related to solid waste

Energy

- Require or result in the construction or expansion of electrical and natural gas facilities, which could cause significant environmental impacts
- Encourage the wasteful or inefficient use of energy

4.15.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The Initial Study deferred analysis of the project's impacts on utilities to the EIR. Therefore, all of the utility impacts are addressed in the following analysis.

4.15.4.3 Methodology

Water Supply

As a conceptual land use plan, the 2005 LRDP as amended by the proposed Amendment 2 would continue to help guide the siting of future physical development. The plan, however, does not commit the Campus to any specific projects. To estimate the potential for implementation of the amended 2005 LRDP to result in the need for new or expanded water supply entitlements, water demand associated with new development that could occur under the 2005 LRDP as amended was compared to available water supplies presented in the City's 2010 UWMP. In addition, the City was contacted to confirm that it would be able to supply the additional amount of water that the Campus would need at full development under the amended 2005 LRDP.

Wastewater

To determine the potential for development that could occur under the 2005 LRDP as amended to exceed wastewater treatment requirements, the amended 2005 LRDP program and policies were evaluated to determine whether implementation of the proposed amendment to the 2005 LRDP would result in exceedances of applicable wastewater requirements. To assess the potential for full development of the campus under the amended 2005 LRDP to require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, or to result in a determination by the wastewater treatment provider that serves the project that it has adequate capacity to serve the projected future wastewater treatment demand, an estimate of future wastewater flows from new development associated

with the amended 2005 LRDP was compared to available wastewater treatment capacity. Wastewater demand was derived, by assuming that 40 percent of domestic water used on campus would be discharged as wastewater with 60 percent of the domestic water used for landscaping.

Stormwater Drainage

Potential impacts that would result from development that could occur under the 2005 LRDP as amended were evaluated, including the construction of new storm water drainage facilities or expansion of existing facilities to cause significant environmental effects by comparing existing land uses to those that are proposed under the amended 2005 LRDP.

Solid Waste

To determine the potential for campus development under the amended 2005 LRDP to be served by a landfill with insufficient permitted capacity or to fail to comply with applicable federal, State, and local statutes and regulations related to solid waste, future solid waste generation for such development was calculated. A generation factor in terms of tons of solid waste per 1,000 square feet of building space on campus was developed by comparing existing occupied building space to existing generation of solid waste. This rate of 0.675 ton/1,000 square feet/year was then applied to projected future occupied building space, and the resulting estimate of future solid waste from the campus was compared to projected future landfill capacity to determine the net effect. In addition, the LRDP program and policies were evaluated to determine whether implementation of the proposed project would hinder compliance with applicable solid waste statutes.

Energy

To determine the potential for campus development that could occur under the 2005 LRDP as amended to require or result in the construction or expansion of electrical and natural gas facilities, the adequacy of existing electrical and natural gas facilities was reviewed to determine if new electrical and natural gas facilities would be required. In addition, demand associated with new development was compared to available energy supplies.

4.15.4.4 Project Impacts and Mitigation Measures

Water Supply

Impact 4.15-1 **Development under the proposed 2005 LRDP Amendment 2 would generate an additional demand for water. However, the proposed project includes relevant Programs and Practices that will be implemented as individual development projects are proposed on the campus and will ensure that new or expanded water supply entitlements will not be required. This impact would be less than significant.**

The addition of about 3.1 million gsf of building space associated with the SOM would result in an increase in water demand that was not previously considered in the 2005 LRDP EIR. The relocation of the two parking garages, the reconfiguration of West Campus open space, and the housing and open space now designated on the Campus Reserve site represent land uses that were previously considered under the 2005 LRDP and would not result in an increase in water demand that was not previously considered. Although the proposal to allow retail or office uses within parking structures on the campus was also not considered in the 2005 LRDP, the building space associated with the retail and office uses that would be within the parking structures is encompassed within the total new building space that was considered in the 2005 LRDP EIR and evaluated for its impact on water supply. The remaining elements of the proposed 2005 LRDP Amendment 2 are programmatic in nature and would not cause the total amount of water needed on the campus to increase.

Total campus domestic water consumption at this time is approximately 2.5 mgd, or approximately 2,800 afy not including non-potable water used to irrigate the agricultural teaching and research fields. Approximately 40 percent of the total campus domestic water consumption is attributed to indoor use, including air conditioning, cooling, and hygienic uses, and approximately 60 percent of the water is used for landscape irrigation. Of the 40 percent indoor use, primary water uses include residential, research and laboratory, steam boilers and cooling towers, chillers, food facilities, restrooms, custodial areas, showers, and drinking fountains. Non-potable water irrigation of the agricultural teaching and research fields is provided from the Gage Canal, from which the Campus has water rights for approximately 14.51 afy, or approximately 12,954 gallons per day (although daily water use varies over the year). The Campus also has the right to purchase "extra" water from the Gage Canal, and periodically purchases additional water to augment non-potable irrigation water for the agricultural teaching and research fields.

Projected future water demand for the East Campus was estimated from a combination of current demands from existing facilities and future demands from new uses based on sustainability factors for future academic, residential and landscape uses. Because future development on the West Campus would consist of newly constructed buildings, projected domestic water use is based entirely on sustainable water use practices and policies included in the 2005 LRDP as PPs and PSs. For students living on-campus, the sustainability demand factor is 70 gallons per day. For students, faculty, and staff not living on-campus but on the campus during the course of the day, the sustainability demand factor is 20 gallons per day. As shown in **Table 4.15-4, Existing and Projected UCR Campus Water Demand**, future water demand on the East Campus would increase over existing conditions to a total of approximately 3.0 mgd (or approximately 3,360.4 afy) while future water demand on the West Campus would increase to a total of 1.2 mgd (or approximately 1,344.2 afy). The SOM was not proposed at the time that the 2005 LRDP was adopted. Therefore, future water demand from development of the SOM was not taken into account in projections of future water demand on campus analyzed in the 2005 LRDP EIR. It is estimated that the SOM uses would demand approximately 1.1 mgd (or approximately 1,232.2 afy). Therefore, as shown in **Table 4.15-4**, the total water demand of the campus at full implementation of the amended 2005 LRDP would increase to a total of approximately 5.3 mgd (or approximately 5,936.8 afy) by 2020, an increase of approximately 2.8 mgd (or approximately 3,136.4 afy) over existing demand.

Table 4.15-4
Existing and Projected UCR Campus Water Demand
(in mgd)

Location	2009-2010	2020	Increase
East Campus	2.5	3.0	0.5
West Campus (excluding SOM)	0*	1.2	1.2
SOM	0	1.1	1.1
Total	**2.5**	**5.3**	**2.8**

Source: UCR Capital and Planning, 2010
** minimal usage at the present time.*

Non-potable water demand for irrigation of agricultural teaching and research fields would not increase as a result of the proposed 2005 LRDP Amendment 2. As discussed in **Impact 4.2-1** (**Agricultural Resources**), implementation of the proposed 2005 LRDP Amendment 2 would result in the conversion of approximately 37.3 acres of agricultural land to nonagricultural use; thus, the area requiring irrigation by non-potable Gage Canal water would decrease.

During the planning horizon for the 2005 LRDP, UCR would implement, as applicable, the following existing campus Programs and Practices (PP) that would promote water conservation and are assumed to be a part of the proposed project:

PP 4.15-1(a) Improvements to the campus water distribution system, including necessary pump capacity, will be made as required to serve new projects. Project-specific CEQA analysis of environmental effects that would occur prior to project-specific approval will consider the continued adequacy of the domestic/fire water systems, and no new development would occur without a demonstration that appropriate domestic/fire water supplies continue to be available.

PP 4.15-1(b) To further reduce the campus' impact on domestic water resources, to the extent feasible, UCR will

(i) Install hot water recirculation devices (to reduce water waste)

(ii) Continue to require all new construction to comply with applicable State laws requiring water-efficient plumbing fixtures, including but not limited to the Health and Safety Code and Title 24, California Code of Regulations, Part 5 (California Plumbing Code)

(iii) Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time

(iv) Install recovery systems for losses attributable to existing and proposed steam and chilled-water systems

(v) Prohibit using water as a means of cleaning impervious surfaces

(vi) Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time

(This is identical to Hydrology PP 4.8-2(a).)

PP 4.15-1(c) The Campus shall promptly detect and repair leaks in water and irrigation pipes.

(This is identical to Hydrology PP 4.8-2(b).)

PP 4.15-1(d) The Campus shall avoid serving water at food service facilities except upon request.

(This is identical to Hydrology PP 4.8-2(c).)

In addition, campus development under the amended 2005 LRDP would also be required to follow water conservation policies listed in the UC Sustainability Policy and adhere to goals listed in the water section of the SAP. Finally, campus development would comply with any future conservation goals or programs enacted by the University of California. All of these measures would help minimize the increase in water

demand at the campus under the amended 2005 LRDP. Nonetheless the total water demand on the campus would increase compared to existing conditions.

The 2010 UWMP prepared by the RPU identified an adequate supply of potable water to meet future demands (through 2035) within its water supply service area under a normal weather conditions scenario. As indicated in **Table 4.15-5, City of Riverside Water Supply and Demand – Normal Weather Conditions,** a surplus of 40,026 afy would exist in 2020, which is the build out year for the amended 2005 LRDP.

Table 4.15-5
City of Riverside Water Supply and Demand – Normal Weather Conditions
(acre-feet)

	2015	2020	2025	2030	2035
Total Supply	129,076	143,226	143,226	143,226	143,226
Demand [1]	93,850	103,200	107,600	112,400	115,600
Difference (Surplus)	**35,226**	**40,026**	**35,626**	**30,826**	**27,626**

Source: City of Riverside Urban Water Management Plan, 2010

1 Demand totals have been adjusted to remove water wheeled to WMWD, as this demand is met with WMWD's water supplies.

For purposes of this assessment, future potable water demand on campus, including the demand that would occur as a result of the proposed amendment, were assumed not to have been included in this demand projection. If the campus's additional water demand of 2.8 mgd, or 3,136.4 afy is incrementally added to the projected demand in the RPU service area for 2020, the resulting total demand (103,200 plus 3,136.4 afy for a total of 106,336.4 afy) would be less than the total supply for that year of 143,226 afy, and a surplus would still remain.

The City has also confirmed that an adequate supply would exist to serve the project. According to the City, 2,128 afy of water demand associated with the projected growth under the 2005 LRDP is accounted for in the 2010 UWMP, but 1,232 afy of water needed by SOM is not accounted for in the latest UWMP. However, because of the substantial surplus of supply over demand under normal conditions, the RPU has indicated that it does not anticipate any problems in providing adequate water supply to remaining and new development on the UCR campus (Milligan 2011). Therefore, there is ample supply to meet remaining demand within the RPU service area, including the Campus's demand under the amended 2005 LRDP under normal conditions.

RPU has also identified an adequate supply of potable water to meet future demands (through 2035) under dry weather conditions within its water supply service area. As indicated in **Table 4.15-6, City of Riverside Water Supply and Demand – Single Dry Year Conditions,** a surplus of 30,738 afy would exist in 2020 under single dry year conditions. As indicated in **Table 4.15-7, City of Riverside Water Supply and Demand – Multiple Dry Year Conditions,** a surplus of 30,738 afy would exist in the first two years of a multi-dry year period and a surplus of 27,438 afy would exist in the third year of a multi-dry year period. The Campus's incremental water demand of 3,136.4 afy at built out in 2020 when added to the dry year demand from other land uses in 2020 under both scenarios would still not exceed the available supply. Because of a substantial surplus of supply over demand under single dry year and multi-dry year period conditions, the RPU has indicated that it does not anticipate any problems providing water to the campus under the amended 2005 LRDP during dry weather conditions (Milligan 2011).

Table 4.15-6
City of Riverside Water Supply and Demand – Single Dry Year Conditions
(acre-feet)

	2015	2020	2025	2030	2035
Total Supply	129,076	143,226	143,226	134,226	143,226
Demand [1]	102,076	112,488	117,284	122,516	126,004
Difference (Surplus)	**26,780**	**30,738**	**25,942**	**20,710**	**17,222**

Source: City of Riverside Urban Water Management Plan, 2010
1 Demand totals are assumed to increase 9-percent above average/normal year demands during dry period

As discussed above, the primary source of RPU's water supply is groundwater from the Bunker Hill, Riverside North and Riverside South groundwater basins. The Bunker Hill basin is adjudicated, and its safe yield and export rights from the basin are well defined. RPU's water supply from the Bunker Hill Basin is considered reliable during single and multi-year dry periods (Riverside 2011). While not adjudicated, the Riverside North and Riverside South basins are subject to management under a 1969 judgment. The safe yield for the Riverside North and South basins was established based on 43 years of historical production and hydrologic conditions (1965 to 2007). This period includes wet, dry, and normal periods and is considered to be representative of long-term mean hydrological conditions. The safe yield for the Riverside North and Riverside South basins is 27,200 afy and 35,100 afy, respectively (Riverside 2011). Therefore, RPU's supply of groundwater is expected to be reliable. In addition, groundwater is also expected to be reliable as it is less vulnerable to seasonal climatic changes.

Table 4.15-7
City of Riverside Water Supply and Demand – Multiple-Dry Year Conditions
(acre-feet)

		2015	2020	2025	2030	2035
Multiple Dry Year First Year Supply	Total Supply	129,076	143,226	143,226	143,226	143,226
	Demand [1]	102,297	112,488	117,284	122,516	126,004
	Difference (Surplus)	**26,780**	**30,738**	**25,942**	**20,710**	**17,222**
		2015	**2020**	**2025**	**2030**	**2035**
Multiple Dry Year Second Year Supply	Total Supply	129,076	143,226	143,226	143,226	143,226
	Demand [1]	102,297	112,488	117,284	122,516	126,004
	Difference (Surplus)	**26,780**	**30,738**	**25,942**	**20,710**	**17,222**
		2015	**2020**	**2025**	**2030**	**2035**
Multiple Dry Year Third Year Supply	Total Supply [2]	125,776	139,926	139,926	139,926	139,926
	Demand [1]	102,297	112,488	117,284	122,516	126,004
	Difference (Surplus)	**23,480**	**27,438**	**22,642**	**17,410**	**13,922**

Source: City of Riverside Urban Water Management Plan, 2010

1 Demand totals are assumed to increase 9-percent above average/normal year demands during dry period

2 Supply totals for the third consecutive year of a dry period where reduced to account for the reduced production from RPU's conjunctive use projects.

Concerning planned sources of supply, the RPU intends to augment natural recharge in the Bunker Hill and Riverside Basins through conjunctive use projects. The amount of recharge is affected by hydrological conditions within the Santa Ana River watershed. During wet years above average recharge will occur while in dry years below average recharge will occur. Each of these projects has inherent storage capacity. (Riverside 2011).

The primary source of recycled water is local groundwater that has gone through the potable distribution system. The RPU plans to reuse the available volume of recycled water from the RRWQCP and considers this supply to be 100 percent reliable (Riverside 2011).

The RPU also receives small quantities of imported water from the WMWD to meet peak demand during very hot summer days. The 2009 State Water Project Reliability Report estimates a decrease in water delivery reliability from the State Water Project over the next 20 years. On an average long-term basis, State Water contractors can expect about 60 percent of their annual maximum entitlement. The RPU has implemented several measures to maximize the use of local water resources and eliminate reliance on imported water (Riverside 2011).

The City of Riverside's General Plan EIR (SCH No. 2004021108), certified in November 2007, also confirms that the available supplies (both existing and planned) would not exceed the projected demand for water in the RPU service area under the typical growth scenario. The EIR however notes that should growth occur in line with the Maximum or the Maximum with Planned Residential Development (PRD) scenarios which involve greater levels of residential and commercial development within the RPU service area, the demand would exceed existing and planned supply. However, with the implementation of several General Plan policies related to water supply and mitigation measures that include acquisition of additional water from WMWD or other wholesale provider and implementation of water conservation regulations, the impact under the higher growth scenarios would be reduced to a less than significant level. As noted earlier, that EIR is incorporated by reference.

Given the economic downturn in recent years, it is unlikely that residential and commercial growth in the RPU service area will occur at the higher growth rates projected under the Maximum and Maximum with PRD scenarios. Therefore, it is considered unlikely that the 2020 water demand within the RPU service area would increase to the levels projected under these scenarios. Furthermore, as noted above, the RPU has indicated that it has adequate water supply to serve the campus growth under the amended 2005 LRDP. As the increase in water usage on the campus would be minimized by existing campus Programs and Practices, and because the RPU would be able to provide the necessary water using existing entitlements and resources, implementation of the amended 2005 LRDP would not result in the need for new or expanded water supply entitlements, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.15-2 **Development under the proposed 2005 LRDP Amendment 2 would generate an additional demand for water on the campus. However, the proposed project includes relevant Programs and Practices that ensure that the construction of new or expanded water treatment facilities will not be required. The impact would be less than significant.**

As presented in **Impact 4.15-1** above, campus development under the amended 2005 LRDP would result in an increase in water demand of about 1.1 mgd associated with the SOM that was not previously considered in the 2005 LRDP EIR.

As noted in **Section 4.15.2, Existing Conditions**, the RPU provides water service to the UCR campus. As required by the California Department of Health Services, the RPU routinely monitors the water quality in wells that supply potable water. As described in detail under **Impact 4.15-1** above, there would be sufficient water supplies from existing entitlements and resources to serve development that would result

from implementation of the 2005 LRDP as amended. As the increase in water usage on the campus would be minimized by the implementation of PP 4.15-1(a) and PP 4.15-1(d),listed under **Impact 4.15-1** above as applicable, and because the City would be able to provide the necessary water using existing or planned water treatment facilities, implementation of the proposed 2005 LRDP as amended is not expected to result in the construction of new water treatment facilities or the expansion of existing facilities. However, to the extent that any new water treatment facilities are required, because of the relatively small scale and nature of these wellhead improvements, the construction and operation of these facilities is not likely to result in significant environmental impacts. Therefore, this impact would be less than significant. Even though the impact would be less than significant, the Campus proposes to implement **Mitigation Measure 4.15-2** to further reduce its potential impact.

Mitigation Measure:

MM 4.15-2 Should the City determine that construction of new water treatment facilities or expansion of existing water treatment facilities is required in order to accommodate campus demand, and the analysis of the environmental effects of constructing or expanding these facilities indicate that there would be potentially significant impacts requiring mitigation, the University will pay its proportional share of the cost of the environmental mitigation required for the project.

Wastewater

Impact 4.15-3 **Development under the proposed 2005 LRDP Amendment 2 would generate additional wastewater on the campus which could require the construction of new or expanded wastewater treatment facilities. However, the construction and operation of the expanded wastewater treatment facilities would not result in significant environmental impacts. The impact would be less than significant.**

The Campus does not treat or discharge wastewater to any surface waters. Wastewater generated at the campus is collected and discharged into the City's sewer system from where it is conveyed to the City of Riverside Regional Water Quality Control Plant (RRWQCP) for treatment and disposal. Therefore the Campus is not considered a point-source of water pollution for regulatory purposes and is not subject currently to any Waste Discharge Requirements established by the SARWQCB.

The addition of about 3.1 million gsf of building space associated with the SOM would result in an increase in wastewater generated on campus that was not previously considered in the 2005 LRDP EIR. For reasons presented in **Impact 4.15-1** above, all of the other elements of the proposed 2005 LRDP

Amendment 2 would not increase the total amount of water used indoors on the campus and therefore would not increase the amount wastewater generated on the campus above the amount that was considered in the 2005 LRDP EIR.

Total campus wastewater generation at the present time is approximately 1.1 mgd. As shown in **Table 4.15-7, Existing and Projected UCR Campus Sewer Flows**, according to the 2005 LRDP EIR, projected wastewater flows from the East Campus would increase to 1.5 mgd while projected wastewater flows from the West Campus would increase to 0.5 mgd. The 2005 LRDP EIR did not consider the proposed SOM on the West Campus. Therefore, future wastewater flows from development of the SOM were not taken into account in projections of future wastewater flows on campus. It is estimated that the SOM would discharge approximately 0.4 mgd at buildout. Therefore, as shown in **Table 4.15-8**, future wastewater flows would increase to a total of approximately 2.4 mgd, an increase of approximately 1.2 mgd over existing levels.

Table 4.15-8
Existing and Projected UCR Campus Sewer Flows
(in mgd)

Location	2009-2010	2020	Increase
East Campus	1.1	1.5	0.4
West Campus (excluding SOM)	Less than 0.1	0.5	0.4
SOM	-	0.4 [a]	0.4
Total	**1.2**	**2.4**	**1.2**

Source: UCR Capital and Planning, 2010
a Represents 40 percent of SOM water demand (1.5 mgd)

Campus development under the amended 2005 LRDP would be required to follow water conservation policies listed in the UC Sustainability Policy and adhere to goals listed in the water section of the SAP. Compliance with these requirements would reduce water use, which, in turn, would reduce wastewater flows. During the planning horizon for the 2005 LRDP as amended, the Campus will also continue to implement, as applicable, the following existing campus Program and Practice (PP) that would reduce or avoid potential impacts associated with water quality standards or waste discharge requirements and is assumed to be part of the proposed project:

PP 4.15-5 The Campus will continue to comply with all applicable water quality requirements established by the SARWQCB.

Although reductions in campus wastewater flows would be achieved by these measures, the flows would nonetheless increase above current levels. As discussed above, the City of Riverside RRWQCP provides treatment of all campus-generated wastewater. It is responsible for meeting federal and State requirements, including applicable Waste Discharge Requirements established by the SARWQCB for its wastewater treatment plant. The RRWQCP currently treats 33 mgd and has a capacity of 40 mgd. In addition, plans are underway to increase treatment capacity at the RRWQCP to 46 mgd. It is estimated that the remaining campus development under the previously approved 2005 LRDP would generate 0.8 mgd of wastewater, while operation of the proposed SOM would generate an additional 0.4 mgd of wastewater. Combined, the amount of wastewater associated with campus development under the amended 2005 LRDP would be an additional 1.2 mgd over existing conditions. Because the RRWQCP has a current excess capacity of 7 mgd and the additional 6 mgd of capacity that is planned for construction, if all 1.2 mgd of campus-generated new wastewater flows were added to the system under existing or near term conditions, the RRWQCP would have enough capacity to treat 1.2 mgd of wastewater flows from the future development on the campus. However, wastewater flows from the campus would increase incrementally over time. During the same period, other population growth in the City of Riverside and other communities in the RRWQCP's service area would also result in increased wastewater flows. The flows from the campus combined with flows from existing and new development in the service area could exceed the planned capacity of 46 mgd and additional treatment capacity (beyond 46 mgd) could be needed to handle the combined flows. However, according to the City, it would evaluate the projected increase in campus wastewater flows and flows from other new development relative to the information in the IWWMP and determine what additional capacity improvements, if any, are needed. With a revision to the IWWMP to include the additional projected flows from the campus, the City would not anticipate problems in accommodating the projected flows from UCR (Young 2011). This is because the IWWMP identifies facilities that could be added to the treatment plant to increase its capacity to 52.2 mgd.

The environmental effects of expanding the RRWQCP capacity to 52.2 mgd were evaluated by the City in an EIR prepared for the IWWMP in 2010, (SCH No. 2009041054), certified in October 2010. The analysis in that EIR revealed that all the necessary capacity improvements would be located on the site of the existing treatment plant and that the construction and operation of the expanded treatment plant would not result in significant and unavoidable environmental impacts. That EIR is incorporated by reference. Based on the above, although the proposed project, in combination with other new development, would result in the need for the construction of expanded wastewater treatment facilities, construction of these facilities would not result in significant environmental impacts.

Furthermore, as adequate capacity to treat the additional flows from the campus would be established, the RRWQCP is expected to continue to comply with wastewater treatment requirements of the SARWQCB. In addition, no hazardous wastes are discharged into the sewer or storm drainage system on campus. Although there are no wastewater treatment requirements of the SARWQCB applicable to the UCR campus, per PP 4.15-5, should such requirements be established, the Campus would be required to comply with them.

Given the above, campus growth under the amended 2005 LRDP would not result in significant environmental impacts associated with the provision of wastewater treatment capacity, and the impact would be less than significant. However, the Campus proposes to implement **Mitigation Measure 4.15-3** to further reduce its potential impact.

Mitigation Measure:

MM 4.15-3 Should the City determine that construction of new or expanded wastewater treatment facilities is required in order to accommodate campus flows, and the analysis of the environmental effects of constructing or expanding these facilities indicate that there would be potentially significant impacts requiring mitigation, the University will pay its proportional share of the cost of the environmental mitigation required for the project.

Impact 4.15-4 **Development under the proposed 2005 LRDP Amendment 2 could require the construction of new or expanded wastewater conveyance systems. However, the construction of new or expanded wastewater conveyance systems would not result in significant environmental effects. The impact would be less than significant.**

As stated above, the addition of about 3.1 million gsf of building space associated with the SOM would result in an increase in wastewater generated on campus that was not previously considered in the 2005 LRDP EIR. As shown above, the remaining campus development under the previously approved 2005 LRDP combined with the proposed SOM would generate an additional 1.2 mgd of wastewater above current flows.

UCR routinely monitors the capacity of sewer lines on campus in order to ensure that they are capable of supporting new development. This would ensure that sewer line capacity on campus would be improved as necessary to accommodate increased flows. However, these UCR-maintained lines connect to City sewer lines that convey wastewater to the RRWQCP for treatment. Because the specific location of future development is not known, the potential for discharge into any specific City sewer line is not currently known. Although the City and UCR have an agreement that allows the Campus to discharge 1.55 cfs

(approximately 1 mgd) into the 15-inch City trunk sewer running along the University Avenue alignment from Valencia Hill Drive to Canyon Crest Drive, the amount of wastewater discharged into this or other lines could exceed the negotiated amount within the University Avenue line, or other lines serving the campus. The generation of wastewater flows in excess of sewer line capacity could require the construction of new wastewater conveyance facilities or expansion of existing conveyance facilities on and off campus, or expanded water conservation measures. If the Campus' needs exceed the negotiated amount or the new wastewater flows from a future project on the campus exceed the capacity of the City sewer line receiving those flows, UCR would negotiate a payment proportional to the University's share of improvements to provide sufficient conveyance capacity pursuant to Government Code 54999 et seq.

The potential environmental effects associated with expanding existing sewer trunk lines or providing new wastewater conveyance systems on the campus are evaluated in this EIR as part of the proposed project, in **Sections 4.1** through **4.16**. The construction of wastewater conveyance facilities off campus is also not expected to result in significant environmental impacts because, due to the nature of infrastructure projects (i.e., within existing right-of way underneath City streets), potential impacts are expected to be less than significant or if potentially significant, capable of being mitigated to a less than significant level with mitigation. Therefore the environmental impact result from the construction of wastewater conveyance facilities or expansion of existing conveyance facilities on and off campus would be less than significant. However, the Campus proposes to implement **Mitigation Measure 4.15-4** to further reduce its potential impact.

Mitigation Measure:

MM 4.15-4 Should the City determine that construction of new wastewater conveyance facilities or expansion of existing conveyance facilities on and off campus is required in order to accommodate campus discharges, and the analysis of the environmental effects of constructing or expanding these facilities indicate that there would be potentially significant impacts requiring mitigation, the University will pay its proportional share of the cost of the environmental mitigation required for the project.

Stormwater

Impact 4.15-5 **Implementation of the proposed 2005 LRDP Amendment 2 would require the construction of new stormwater drainage systems or the expansion of existing stormwater drainage systems. However, the construction of new or expanded stormwater drainage facilities would not result in significant environmental effects. The impact would be less than significant.**

The addition of about 3.1 million gsf of building space associated with the SOM would require the installation of additional storm drain improvements on the campus that were not previously considered in the 2005 LRDP EIR. For reasons presented in the sections above, all of the other elements of the proposed 2005 LRDP Amendment 2 would not result in the installation of new or substantially different storm drain systems from those that were previously considered in the 2005 LRDP EIR.

Remaining campus development under the previously approved 2005 LRDP would require the extension of existing storm drainage systems on the East Campus to convey stormwater runoff from sites that are currently undeveloped or that would be subject to infill or redevelopment. Development that would occur under the proposed 2005 LRDP as amended would require the installation of a new storm drain system, consisting of surface drainage swales connected to existing storm drains located along MLK and Cranford Avenue. In general, the extension of storm drains or installation of new drains would include both above- and below-grade elements. Above-grade elements would include curbs and drains along streets, parking lots, sidewalks and other impervious surfaces, gutters and piping to convey runoff from building roofs, and landscaped drainage swales. Underground elements would include catch basins and pipes or culverts to convey flows to existing storm drain systems.

Physical alterations, including expansion of existing storm drain facilities, are expected to disturb relatively small areas that have been previously disturbed (e.g., linear trenches in existing roadways) and require installation of relatively small physical improvements. The potential environmental effects associated with construction and operation of expanded and new storm drain facilities are considered as part of the LRDP buildout and evaluated in this EIR as part of the programmatic analysis presented in **Sections 4.1** through **4.16**. The modification, expansion, or construction of storm drain facilities could contribute to the effects on air, noise, traffic, agriculture, and other resource areas that are fully analyzed in this EIR. Potential impacts on biological and cultural resources are adequately addressed in the 2005 LRDP EIR.

The construction of storm drain facilities off campus is also not expected to result in significant environmental impacts because, due to the nature of infrastructure projects (i.e., within existing right-of

way underneath City streets), potential impacts are expected to be less than significant or if potentially significant, capable of being mitigated to a less than significant level with mitigation. Therefore the environmental impact result from the construction of storm water facilities or expansion of existing storm water facilities on and off campus would be less than significant. However, the Campus proposes to implement **Mitigation Measure 4.15-5** to further reduce its potential impact.

Mitigation Measure:

MM 4.15-5 Should the City determine that construction of new storm water facilities or expansion of existing storm water facilities on and off campus is required in order to accommodate campus discharges, and the analysis of the environmental effects of constructing or expanding these facilities indicate that there would be potentially significant impacts requiring mitigation, the University will pay its proportional share of the cost of the environmental mitigation required for the project.

Solid Waste

Impact 4.15-6 **Development under the proposed 2005 LRDP Amendment 2 would generate solid waste, but not enough to require the expansion of the permitted capacity of a regional landfill. This impact would be less than significant.**

The addition of about 3.1 million gsf of building space associated with the SOM would result in an increase in solid waste generated on campus that was not previously considered in the 2005 LRDP EIR. For reasons presented in the sections above, all of the other elements of the proposed 2005 LRDP Amendment 2 would not increase the total amount of solid waste generated on the campus above the amount that was projected and considered in the 2005 LRDP EIR.

As discussed in **Section 4.15.2, Existing Conditions**, approximately 55 percent of solid waste stream on campus is diverted, recycled, or reused, which is consistent with the goals of the Integrated Waste Management Act. The Year 2009/10 solid waste generation for UCR is shown in **Table 4.15-9, 2009-10 Solid Waste Generation for UCR**.

Table 4.15-9
2009-10 Solid Waste Generation for UCR

	Development on Campus (gsf)	Solid Waste Generated (tons/year)	Tons recycled per year	Percent recycled per year	Solid Waste Generation Factor (tons/1,000	Total Solid Waste to Landfill
Campus Operation	6,552,265	4,424	2,429	55%	0.675 [a]	1,995

Source: Impact Sciences, 2010

a The solid waste generation factor is calculated by dividing the total solid waste generated on campus by the total existing baseline square footage (e.g., 4,424 tons per year/6,552,265 gsf = 0.000675 tons per year/square foot or 0.675 tons per year/1,000 square feet). Therefore, the UCR solid waste generation factor is 0.675 tons per year/1,000 square feet.

As shown in **Table 4.15-10, Projected Increase in Campus Solid Waste Generation**, below, with a total of approximately 6.5 million gsf of existing development on campus and a solid waste generation amount of 4,424 tons per year, a solid waste generation factor of 0.675 ton per 1,000 square feet was calculated for the campus. This generation factor, in turn, was used to estimate the amount of solid waste that will be generated by new development under the amended 2005 LRDP. In addition, by assuming that the Campus will continue to recycle 55 percent of its solid waste generated from campus operation, the total amount of solid waste recycled per year was also calculated. The future solid waste generation for UCR is shown in **Table 4.15-9**.

Table 4.15-10
Projected Increase in Campus Solid Waste Generation

	Development on Campus (gsf)	Solid Waste Generation Factor (tons/1,000	Solid Waste Generated (tons per year)	Tons recycled per year	Percent recycled per year	Total Solid Waste to Landfill
2005 LRDP	5,250,442 [a]	0.675	3,544	1,949	55%	1,595
SOM	3,061,165	0.675	2,066	1,136	55%	930
Total	**8,311,607**	**N/A**	**5,610**	**3,086**	**55%**	**2,525**

Source: Impact Sciences, 2010

a Represents the amount of development remaining under the 2005 LRDP: 11,802,707gsf (planned) - 6,552,265 gsf (existing) = 5,250,442 gsf.

Projected solid waste generation from development remaining under the 2005 LRDP would be approximately 3,544 tons per year while projected solid waste generation from operation of the proposed SOM would be about 2,066 tons per year. Combined, the amount of solid waste associated with the amended 2005 LRDP would be about 5,610 tons per year. It is anticipated that solid waste from UCR would continue to be disposed at the Badlands landfill, in the City of Moreno Valley, which has an estimated capacity of approximately 9.0 million tons. Based on the current permit, the landfill is expected to close in 2024. The Badlands landfill currently receives approximately 1,667 tons per day, but is permitted for a maximum of 4,000 tons per day. The approximately 5,610 tons of solid waste per year from the campus would equate to an additional 15 tons of solid waste per day—an increase of less than 0.5 percent of landfill's permitted daily capacity—and can be accommodated within the remaining permitted capacity of the Badlands landfill.

Development that would occur under the 2005 LRDP as amended would also be required to follow recycling and waste management polices listed in the UC Sustainability Policy and adhere to goals listed in the recycling and waste management section of the SAP. Solid waste generated on the campus will be sorted at the new West Campus recycling center where recyclables will be removed for recycling and compostable materials will be composted. Therefore the waste requiring landfill disposal is expected to be lower than the numbers reported above. Implementation of the proposed 2005 LRDP Amendment 2 would not result in the generation of solid waste at levels that exceed the permitted landfill capacity, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.15-7 **Implementation of the proposed 2005 LRDP Amendment 2 would comply with all applicable federal, State, and local statutes and regulations related to solid waste. The impact would be less than significant.**

The University of California is not subject to AB 939 but voluntarily applies its standards as a goal. The Campus currently meets the AB 939 solid waste reduction goal with a 55 percent diversion rate from the solid waste stream through recycling, diverting, composting, or reuse on the campus. Such programs would continue during the 2020/21 planning horizon of the 2005 LRDP as amended. As the Campus would continue to comply with applicable federal, state, and local statutes and regulations related to solid waste and the UC Policy on Sustainable Practices, this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Energy

Impact 4.15-8 **Implementation of the proposed 2005 LRDP Amendment 2 could increase the demand for electricity, but would not require or result in the construction of significant new distribution facilities, the construction of which could cause significant environmental impacts. The impact would be less than significant.**

The addition of about 3.1 million gsf of building space associated with the SOM would result in an increase in electricity demanded on campus that was not previously considered in the 2005 LRDP EIR. For reasons presented in the sections above, all of the other elements of the proposed 2005 LRDP Amendment 2 would not increase the total amount of electricity required on the campus above the amount that was considered in the 2005 LRDP EIR.

Total existing campus annual electricity demand is approximately 25.5 MVA. Total campus development under the amended 2005 LRDP (including the proposed SOM) would demand 49 MVA, which is an increase of 23.5 MVA over existing conditions. The total capacity of the existing 12 kV substation is 54 MVA, so the existing UCR campus electrical distribution system would be able to accommodate the anticipated increase in demand due to project implementation. In addition, the RPU does not anticipate any problems in providing electricity to remaining and new development on campus. In addition, the RPU does or will have adequate infrastructure to serve remaining and new development on campus as needed based upon specific timing of development and/or load additions (McKown 2011).

Development that would occur under the amended 2005 LRDP would be required to follow energy conservation policies listed in the UC Sustainability Policy and minimize energy use in order for the Campus to attain the greenhouse gas (GHG) reduction goals listed in the Campus Climate Action Plan (CAP). In addition, campus development would comply with any future conservation goals or programs enacted by the University of California.

With adherence to energy conservation policies listed in the UC Sustainability Policy and efforts to reach GHG reduction goals in the CAP, development that would occur under the amended 2005 LRDP would not require the construction or expansion of electrical facilities, which could cause significant environmental effects. Therefore, the impact related to new distribution facilities would be less than significant. For impact related to off-site power generation and transmission facilities, see **Impact 4.15-18** below.

Mitigation Measures: No mitigation is required.

Impact 4.15-9 **Implementation of the proposed 2005 LRDP Amendment 2 could increase the demand for natural gas, but would not require or result in the construction of new gas production or transmission facilities, the construction of which could cause significant environmental impacts. The impact would be less than significant.**

The addition of about 3.1 million gsf of building space associated with the SOM would result in an increase in natural gas demanded on campus that was not previously considered in the 2005 LRDP EIR. For reasons presented in the sections above, all of the other elements of the proposed 2005 LRDP Amendment 2 would not increase the total amount of natural gas demanded on the campus above the amount that was considered in the 2005 LRDP EIR.

Total campus natural gas demand at the present time is approximately 13,758 therms per day. Total campus development under the amended 2005 LRDP (including the SOM) would result in a demand of 45,458 therms per day, which is an increase of 31,700 therms per day over existing conditions.

As stated above, development that would occur under the amended 2005 LRDP would be required to follow energy conservation policies listed in the UC Sustainability Policy and minimize energy use in order for the campus to attain the GHG reduction goals listed in the Campus CAP. In addition, campus development would comply with any future conservation goals or programs enacted by the University of California. All of these measures would help minimize the increase in natural gas demand at the campus under the amended 2005 LRDP. Nonetheless the total natural gas demand on the campus would increase compared to existing conditions.

The SCGC has indicated that it could provide gas service to the campus under the amended 2005 LRDP, and that service would be in accordance with the Company's policies and extension rules on file with the California Public Utilities Commission (Gerlach 2011). Modifications and extensions of existing natural gas distribution infrastructure on the campus would be required to serve new development, particularly on the West Campus. The potential environmental effects associated with expanding existing natural gas distribution mains or providing new natural gas mains were evaluated as part of the effects of implementation of the entire development program in the 2005 LRDP EIR. Environmental effects from additional development on the West Campus including utility infrastructure as a result of the proposed Amendment 2 are addressed by environmental factor as part of the programmatic analysis of construction impacts in **Sections 4.1** through **4.16** of this EIR. The modification, expansion, or construction of natural gas conveyance systems could contribute to the effects on air, noise, traffic, agriculture, and other resource areas that are fully analyzed for the proposed 2005 LRDP Amendment 2. With the incorporation of existing campus Programs and Practices and mitigation measures related to

reducing construction impacts, which are discussed in other sections of this document as well as the 2005 LRDP EIR, and due to the relatively small amount of physical improvements that would be constructed or small areas that could be disturbed, the construction of these facilities would not individually result in significant environmental impacts.

In summary, even with adherence to energy conservation policies listed in the UC Sustainability Policy and efforts to reach GHG reduction goals in the CAP, development that would occur under the amended 2005 LRDP would require the construction or expansion of natural gas distribution lines. However, the construction of these distribution lines would not cause significant environmental effects, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

Impact 4.15-10 **Implementation of the proposed 2005 LRDP Amendment 2 would not result in the wasteful, inefficient, or unnecessary use of energy by UCR. The impact would be less than significant.**

As discussed above, the addition of building space associated with the SOM would result in an increase in electricity and natural gas needed on the campus that was not previously considered in the 2005 LRDP EIR. Future development of the campus under the amended 2005 LRDP would comply with the University policy on sustainability, as well as any future conservation goals or programs enacted by the University of California. New development would also be required to minimize energy use in order for the campus to attain the GHG reduction goals listed in the Campus CAP. For all of these reasons, implementation of the 2005 LRDP as amended would not encourage the wasteful or inefficient use of energy, and this impact would be less than significant.

Mitigation Measures: No mitigation is required.

4.15.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative water supply is the service area of the RPU while the geographic context for the analysis of solid waste is the County of Riverside. The context for cumulative impacts related to wastewater is the service area of the RRWQCP, which includes the City of Riverside. The City of Riverside also represents the context for cumulative impacts to stormwater facilities. For cumulative impacts related to electricity, the geographic context is the service area of the RPU, which supplies power to the City of Riverside. With regard to natural gas cumulative impacts, the geographic context is the Pacific Region service area of the SCGC, which includes the general Riverside area.

Impact 4.15-11 **Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would generate an additional demand for water, but would not require new or expanded water supply entitlements or resources or result in the need for new or expanded entitlements. The cumulative impact would be less than significant.**

Cumulative development within the service area of the RPU would demand additional water supplies, depending on net increases in population, building space, and intensity of uses. This development would contribute to the overall regional water demand, to which the campus would contribute an additional 2.8 mgd by 2020. The 2010 UWMP prepared by the City to assess water demand in the City of Riverside accounts for all projected growth in the RPU service area, which covers a majority of the City's planning area, including the growth of the UCR campus up to an enrollment level of 25,000 students. As noted above, development associated with the amended 2005 LRDP would demand an additional 2.8 mgd, or 3,136.4 afy of water within the water supply service area of the RPU.

The 2010 UWMP includes regional water demand and supply projections, as well as demand management and supply enhancement elements. The City of Riverside has identified an adequate supply of potable water to meet future demands (through 2035) within the water supply service area of the RPU. Currently it is estimated that a surplus of 40,026 afy would exist in the year 2020 during normal water years, which is the build out year for the amended 2005 LRDP. In addition, a surplus of 30,738 afy would exist under single dry year conditions and 27,438 to 30,738 afy under multi-dry year conditions in the year 2020. The EIR prepared for the City of Riverside 2025 General Plan indicates that enough water would be available to serve land uses within the water supply service area of the RPU at full buildout of the General Plan under the typical buildout scenario in the year 2025. However, this assessment would only be true under the typical scenario. If growth under the 2025 General Plan were to occur under two maximum build out scenarios in the RPU's service area, demand would likely exceed supply. However, the 2025 General Plan includes policies that promotes water conservation and the 2025 General Plan EIR includes mitigation that requires the City to monitor growth and acquire additional water from the WMWD or another wholesale provider, or implement water conservation regulations to provide incentives and/or penalties to achieve necessary water conservation. Therefore, adequate water would exist to serve land uses within the RPU service area under typical or maximum development scenarios (Riverside 2007). The proposed amendment to the 2005 LRDP would increase the campus's water demand by 2.8 mgd, or 3136.4 afy at built out in 2020. As noted earlier under **Impact 4.15-1**, the City has indicated that it can serve this demand with its existing supply. Therefore, cumulative water supply impacts for the RPU service area would not be significant.

Mitigation Measures: No mitigation is required.

Impact 4.15-12 **Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would not require the construction of new or expanded water treatment facilities. The cumulative impact would be less than significant.**

As discussed above in **Impact 4.15-11**, the City of Riverside has indicated that there is enough water supply to meet all demands for water in the City of Riverside in the year 2020, and it is unlikely that cumulative development within the City of Riverside will require or result in the construction of new water treatment facilities or the expansion of existing facilities. Furthermore, as discussed under **Impact 4.15-2** above, should such facilities be required, the impacts from constructing and operating these facilities would be less than significant. In addition, the Campus proposes to implement **Mitigation Measure 4.15-2** to pay its proportional share of the cost of the environmental mitigation required for the construction of new or expanded water treatment facilities. Consequently, the cumulative impact with regard to water treatment facilities would not be significant.

Mitigation Measures: No mitigation is required.

Impact 4.15-13 **Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would not cause an exceedance of wastewater treatment requirements of the Santa Ana Regional Water Quality Control Board. The cumulative impact would be less than significant.**

Cumulative development within the service area of the RRWQCP would not result in the exceedance of RWQCB wastewater treatment requirements, and thus would not have a cumulatively considerable impact. The SARWQCB, in connection with the implementation of the NPDES program, has imposed requirements on the treatment of wastewater. Wastewater produced by future development would meet these requirements through treatment available at the RRWQCP. While it is possible that these requirements will not be met at all times, it is anticipated that the RRWQCP will continue to be improved in order to comply with these federally mandated requirements. Therefore the cumulative impact would be less than significant. Additionally, UCR has programs and procedures that ensure that all wastewater discharges made into the sewer system will conform to the requirements of the SARWQCB. Therefore, even if future development would result in a significant cumulative impact, the contribution of the proposed project would not be cumulatively considerable.

Mitigation Measures: No mitigation is required.

Impact 4.15-14 **Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, could require the construction of new or expanded wastewater conveyance and treatment systems. However, the construction and operation of these facilities would not result in significant environmental impacts. The cumulative impact would therefore be less than significant.**

Cumulative development within the service area of the RRWQCP would generate additional quantities of wastewater, depending on net increases in population, building space, and intensification of uses. According to the City of 2025 Riverside General Plan EIR, under the typical General Plan build out scenario, development within the RRWQCP's service area would generate 45.6 mgd/day of wastewater by 2025 while development under the two maximum scenarios would generate 55.3 mgd and 64.0 mgd, respectively. The RRWQCP currently has capacity to treat 40 mgd and is undergoing an upgrade to increase treatment capacity to 46 mgd. The General Plan EIR concluded that with upgrades to the RRWQCP, enough capacity would exist to serve development under the typical development scenario. The General Plan EIR concluded that the RRWQCP would not have enough capacity to treat development under the two maximum scenarios. However, the 2025 General Plan includes policies that address the adequacy of the future wastewater system in the area and the 2025 General Plan EIR includes mitigation that requires the City to monitor the situation and either upgrade the RRWQCP, construct a new wastewater treatment plant, or develop an agreement with the WMWD to take on additional wastewater generated within the City. Therefore, adequate capacity would exist to treat wastewater generated by land uses within the RPU service area under typical or maximum development scenarios (Riverside 2007).

Development associated with the amended 2005 LRDP would add an additional 1.2 mgd of wastewater within the service area of the RRWQCP. As discussed in the City of 2025 Riverside General Plan EIR, the City is taking measures to ensure that enough capacity exists under all development scenarios to treat all future flows within the service area of the RRWQCP. However, as discussed in **Impact 4.15-3**, development associated with the amended 2005 LRDP in combination with other future development in the service area of the RRWQCP could take up existing or new capacity that is developed by the City and create the need for the construction of new or expanded wastewater treatment facilities. However, as shown by the analysis in the EIR for the Integrated Master Plan, the construction of these improvements would not result in significant environmental effects. Nonetheless, the Campus proposes to implement **Mitigation Measure 4.15-3** to pay its proportional share of the cost of the environmental mitigation required for the construction of new or expanded treatment facilities.

Cumulative development within the service area of the RRWQCP could result in the need for additional conveyance infrastructure. However, as wastewater conveyance facilities are typically located within road right-of-ways, it is not expected that any expansion of conveyance infrastructure would result in significant environmental effects. The cumulative impact with regards to conveyance infrastructure would be less than significant. In addition, as discussed under **Impact 4.15-4** above, the Campus proposes to implement **Mitigation Measure 4.15-4** to pay its proportional share of the cost of environmental mitigation identified in CEQA documentation and adopted by the City for the construction of new or expanded conveyance infrastructure, thus further reducing its contribution to this potential cumulative impact.

Mitigation Measures: No mitigation is required.

Impact 4.15-15 **Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would require the construction of new stormwater drainage systems or the expansion of existing stormwater drainage systems. The cumulative impact would be less than significant.**

According to the City's 2025 General Plan EIR, future development within the City of Riverside would generate increased stormwater flows with potential to impact drainage facilities and require the provision of additional facilities (Riverside 2007). Therefore, cumulative development in the City would result in or require the construction of new stormwater drainage facilities or the expansion of existing facilities. However, the 2025 General Plan includes policies that would require the City to routinely monitor the stormwater system and fund and improve the system as identified in the City's Capital Improvement Plan. The 2025 General Plan also includes policies and programs that would minimize the environmental effects from developing such facilities (Riverside 2007).

Development that would occur under the amended 2005 LRDP would require localized modifications or additions to the existing stormwater drainage system that could cause environmental impacts. Similar to the impacts of on-campus storm drain construction under the amended 2005 LRDP, these impacts would occur over a limited area due to the installation of linear trenches and other improvements that would not span a large area. Impacts would be localized and specific to the area affected by the stormwater facility expansions, such that these effects would not cumulate.

However, cumulative development, including increased storm water from the campus, could result in the need for additional conveyance infrastructure. Because storm drain facilities are typically located within road right-of-ways, it is not expected that any expansion of conveyance infrastructure would result in significant environmental effects. The cumulative impact with regards to conveyance infrastructure

would be less than significant. In addition, as discussed under **Impact 4.15-5** above, the University proposes to implement **Mitigation Measure 4.15-5** to pay its proportional share of the cost of environmental mitigation identified in CEQA documentation and adopted by the City for the construction of new or expanded conveyance infrastructure, thus further reducing its contribution to this potential cumulative impact.

Mitigation Measures: No mitigation is required.

Impact 4.15-16 **Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would generate solid waste, but not enough to require the expansion of the permitted capacity of a regional landfill. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.**

Cumulative development within the City of Riverside would produce additional quantities of solid waste, depending on net increases in population, building space, and intensity of uses, and quantities of demolition debris generated by redevelopment projects. This development would contribute to the regional demand for solid waste disposal and landfill capacity. The Riverside County Waste Management Department has indicated that the Badlands Landfill is projected to reach capacity no earlier than 2024. Other landfills in the County, such as the Lamb Canyon Landfill, are currently undergoing the process to expand landfill capacity in order to meet projected demands.

In order to conduct a conservative analysis, cumulative solid waste generation must be evaluated at full buildout of the Riverside County General Plan (which includes a geographic area larger than the City of Riverside and the buildout year of 2040, which is beyond the buildout year of the amended 2005 LRDP. The County of Riverside Program EIR prepared for the General Plan concluded that with the implementation of the proposed General Plan policies and proposed mitigation measures for solid waste collection and disposal services and facilities, adequate landfill space would be available and the growth in the County would result in a less than significant impact (Riverside 2003).

The amount of additional solid waste attributable to campus operations associated with the proposed 2005 LRDP Amendment 2 is projected to be 5,610 tons per year, of which about 55 percent would be recycled. Given that the County landfills are expected to have adequate capacity to accept all solid waste generated in 2040, it is reasonable to assume that they will be able to accept all solid waste generated in 2020, which is the buildout year of the amended 2005 LRDP. As the intermediary between all UCR generated solid waste hauled from the campus and the Badlands landfill, the West Campus recycling facility and the Robert A. Nelson Transfer Station/MRF would further reduce the 45 percent of UCR solid

waste currently being sent to Badlands landfill through implementation of various sorting and additional recycling methods to those already being implemented by UCR. Considering the existing capacity within the disposal and recycling system and the extent of campus efforts to decrease solid waste generation, the contribution of campus development that would occur under the amended 2005 LRDP to this impact is not considered cumulatively considerable.

Mitigation Measures: No mitigation is required.

Impact 4.15-17 **Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, would comply with all applicable federal, State, and local statutes and regulations related to solid waste. The cumulative impact would be less than significant.**

The California Integrated Waste Management Act of 1989 requires that all cities and counties divert 50 percent of their solid waste by 2000. Through both City and private sector efforts, numerous source reduction, recycling, composting, and reuse programs have been implemented in the City of Riverside. These programs have increased waste diversion in both City government and in the residential and commercial/industrial sectors. The City is currently diverting 64 percent of its solid waste. Given the City's record up to now, cumulative development in the City of Riverside would not hamper the City's ability to reach its waste diversion goals. UCR currently has obtained a 46 percent diversion rate for solid waste, and it is expected that implementation of the proposed amendment to the 2005 LRDP will preserve or improve this high rate of diversion due to the incorporation of solid waste diversion into campus practices. As all jurisdictions are expected to meet the requirements under the state law and the Campus will voluntarily reduce its solid waste for landfill disposal, there would not be a cumulative impact.

Mitigation Measures: No mitigation is required.

Impact 4.15-18 **Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, could increase the demand for electricity and require or result in the construction of new electricity generation or transmission facilities. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.**

Cumulative development within the service area of the RPU would increase demand for electricity, depending on net increases in population, building space, and intensification of uses. According to the City of Riverside 2025 General Plan EIR, development within the RPU's service area under the typical General Plan build out scenario would result in a total energy usage of 4.8 million megawatt hours per

year (MWh/year) or a demand of 1,032 megawatts (MW). Development associated with the amended 2005 LRDP would increase demand by 29.9 MVA over existing conditions. If this amount is added to the projected service area-wide demand of 1,032 MVA, the total demand would be approximately 1,062 MVA. Existing RPU facilities currently provide a total peak capacity of 695 MW. However, planned upgrades to the system will double the inlet capacity, thus provide enough capacity to meet projected power demand under the typical build out scenario, including the demand associated with the proposed project.

Development under the two maximum General Plan scenarios would generate 8.0 MWh/year and 8.2 MWh/year, respectively. The City of Riverside 2025 General Plan EIR indicated that existing and planned facilities would not meet the power needs of these two scenarios. However, the 2025 General Plan includes policies that encourage the use of renewable energy and energy efficient development and promote energy efficient programs that conserve energy 15 percent above Title 24 requirements. In addition, the 2025 General Plan EIR includes mitigation that requires the City to implement accelerated or mandated conservancy of electricity, construct new substations and transmission lines, or develop renewable sources of energy. Therefore, according to the City of Riverside adequate electrical energy capacity would exist to supply energy to land uses within the RPU service area under typical or maximum development scenarios (Riverside 2007).

It would be speculative to assume that cumulative development would generate the need for new electricity generation facilities, or where new generation facilities would be located, or to evaluate environmental impacts resulting from the construction and operation of new facilities. Furthermore, before new production and transmission facilities to serve the growth in the service area are approved by the Southern California Edison or RPU, an environmental document would be prepared that analyzes and discloses environmental impacts from the construction and operation of new facilities and imposes mitigation measures as conditions of project approval to address significant impacts. Therefore, the cumulative impact on electricity production and transmission facilities is not considered further in this Draft EIR. In addition, the amended 2005 LRDP includes sustainability goals to substantially reduce the Campus's energy use. The extensive programs focused on demand reduction would minimize the project's contribution to cumulative impacts.

Mitigation Measures: No mitigation is required.

Impact 4.15-19 **Cumulative development, including development that would occur under the proposed 2005 LRDP Amendment 2, could increase the demand for natural gas and require or result in the construction of new gas production or transmission facilities. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.**

Cumulative development within the service area of the SCGC would increase demand for natural gas and could result in the need for new gas production and transmission facilities, the construction of which could cause a significant environmental impact. However, because natural gas can be transmitted for long distances, it can be obtained from a wide range of sources, both in and out of California. As a result of this characteristic, it would be speculative to assume cumulative development would generate the need for new natural gas production facilities, or where new facilities would be located, or to evaluate environmental impacts resulting from the construction and operation of new facilities in California. In addition, before new production and transmission facilities are approved in California, an environmental document would be prepared that analyzes and discloses environmental impacts from the construction and operation of new facilities and imposes mitigation measures as conditions of project approval to address significant impacts. Therefore, the cumulative impact on natural gas production and transmission facilities is not considered further in this Draft EIR. Furthermore, the amended 2005 LRDP includes sustainability goals to substantially reduce the Campus's natural gas use. The extensive programs focused on demand reduction would minimize the project's contribution to cumulative impacts.

Mitigation Measures: No mitigation is required.

4.15.5 REFERENCES

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4.16 GREENHOUSE GAS EMISSIONS

4.16.1 INTRODUCTION

This section discusses the existing global, national, and statewide conditions related to greenhouse gases (GHG) and global climate change and evaluates the potential impacts on global climate from the implementation of the proposed UCR 2005 LRDP Amendment 2 (proposed project). The section also provides discussion of the applicable federal, state, regional, and local agencies that regulate, monitor, and control GHG emissions. Copies of the calculations made to estimate GHG emissions associated with the proposed project and supporting technical data are found in **Appendix 4.16** of this EIR.

The following sources were used to prepare this section of the Draft EIR:

- UCR 2005 Long Range Development Plan and proposed Amendment 2
- SCAQMD's CEQA Air Quality Handbook/Air Quality Analysis Guidance Handbook
- The UCR Climate Action Plan

No other public or agency comments specifically related to greenhouse gases were received in response to the Notice of Preparation for this EIR, although in its letter, the South Coast Air Quality Management District requested that the District's CEQA Air Quality Handbook be used to conduct the analysis of air quality impacts and that technical documents including calculation spreadsheets and modeling files be provided to the District along with the Draft EIR.

4.16.2 EXISTING CONDITIONS

4.16.2.1 Background

Global climate change refers to any significant change in climate measurements, such as temperature, precipitation, or wind, lasting for an extended period (i.e., decades or longer) (US EPA 2008a). Climate change may result from:

- natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- natural processes within the climate system (e.g., changes in ocean circulation, reduction in sunlight from the addition of GHG and other gases to the atmosphere from volcanic eruptions); and
- human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

The primary effect of global climate change has been a rise in the average global tropospheric temperature of 0.2 degree Celsius (°C) per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming is likely to occur, which would induce further changes in the global climate system during the current century (IPCC 2007). Changes to the global climate system and ecosystems, and to California, could include:

- declining sea ice and mountain snowpack levels, thereby increasing sea levels and sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures (IPCC 2007);
- rising average global sea levels primarily due to thermal expansion and the melting of glaciers, ice caps, and the Greenland and Antarctic ice sheets (model-based projections of global average sea level rise at the end of the 21st century (2090–2099) range from 0.18 meter to 0.59 meter or 0.59 foot to 1.94 feet) (IPCC 2007);
- changing weather patterns, including changes to precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones (IPCC 2007);
- declining Sierra snowpack levels, which account for approximately half of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years (Cal EPA 2006);
- increasing the number of days conducive to ozone formation by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas located in the Southern California area and the San Joaquin Valley by the end of the 21st century (Cal EPA 2006);
- increasing the potential for erosion of California's coastlines and sea water intrusion into the Sacramento and San Joaquin Delta and associated levee systems due to the rise in sea level (California EPA 2006);
- increasing pest infestation, making California more susceptible to forest fires (Cal EPA 2006);
- increasing the demand for electricity by 1 to 3 percent by 2020 due to rising temperatures resulting in hundreds of millions of dollars in extra expenditures (Cal EPA 2006); and
- summer warming projections in the first 30 years of the 21st century ranging from about 0.5 to 2 °C (0.9 to 3.6 °F) and by the last 30 years of the 21st century, from about 1.5 to 5.8 °C (2.7 to 10.5 °F) (Cal EPA 2006).

The natural process through which heat is retained in the troposphere[1] is called the "greenhouse effect." The greenhouse effect traps heat in the troposphere through a threefold process as follows: (1) short-wave radiation in the form of visible light emitted by the Sun is absorbed by the Earth as heat; (2) long-wave

1 The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface from 6 to 7 miles).

radiation re-emitted by the Earth; and (3) GHGs in the upper atmosphere absorbing or trapping the long-wave radiation and re-emitting it back towards the Earth and into space. This third process is the focus of current climate change actions.

While water vapor and carbon dioxide (CO_2) are the most abundant GHGs, other trace GHGs have a greater ability to absorb and re-radiate long-wave radiation. To gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-emit long-wave radiation over a specific period. The GWP of a gas is determined using CO_2 as the reference gas, which has a GWP of 1 over 100 years (IPCC 1996).[2] For example, a gas with a GWP of 10 is 10 times more potent than CO_2 over 100 years. The use of GWP allows GHG emissions to be reported using CO_2 as a baseline. The sum of each GHG multiplied by its associated GWP is referred to as "carbon dioxide equivalents" (CO_2e). This essentially means that 1 metric ton of a GHG with a GWP of 10 has the same climate change impacts as 10 metric tons of CO_2.

4.16.2.2 Greenhouse Gases

State law defines GHGs to include the following compounds:

- **Carbon Dioxide (CO_2)**. Carbon dioxide primarily is generated by fossil fuel combustion from stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources over the past 250 years, the concentration of carbon dioxide in the atmosphere has increased 35 percent (US EPA 2008b). Carbon dioxide is the most widely emitted GHG and is the reference gas (GWP of 1) for determining the GWP of other GHGs. In 2004, 82.8 percent of California's GHG emissions were carbon dioxide (California Energy Commission 2007).

- **Methane (CH_4)**. Methane is emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of methane are landfills, natural gas systems, and enteric fermentation (US EPA n.d.[a]). Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of methane is 21.

- **Nitrous Oxide (N_2O)**. Nitrous oxide is produced by natural and human-related sources. Primary human-related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of nitrous oxide is 310.

- **Hydrofluorocarbons (HFCs)**. HFCs typically are used as refrigerants in both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam-blowing is growing particularly as the continued phase-out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The GWP of HFCs ranges from 140 for HFC-152a to 6,300 for HFC-236fa.

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2 All Global Warming Potentials are given as 100-year values.

- **Perfluorocarbons (PFCs)**. Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. Perfluorocarbons are potent GHGs with a GWP several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years) (Energy Information Administration 2007). The GWPs of PFCs range from 5,700 to 11,900.

- **Sulfur Hexafluoride (SF_6)**. Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the Intergovernmental Panel on Climate Change with a GWP of 23,900. However, its global warming contribution is not as high as the GWP would indicate due to its low mixing ratio, as compared to carbon dioxide (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm] of CO_2) (US EPA n.d.[b]).

4.16.2.3 Contributions to Greenhouse Gas Emissions

Global

Worldwide anthropogenic (man-made) GHG emissions are tracked for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Man-made GHG emissions for Annex I nations are available through 2007. Man-made GHG emissions for Non-Annex I nations are available through 2005. The sum of these emissions totaled approximately 42,133 million metric tons of CO_2 equivalents ($MMTCO_2e$).[3] It should be noted that global emissions inventory data are not all from the same year and may vary depending on the source of the emissions inventory data.[4] The top five countries and the European Union accounted for approximately 55 percent of the total global GHG emissions according to the most recently available data (See **Table 4.16-1, Top Five GHG Producer Countries and the European Union [Annual]**). The GHG emissions in more recent years may differ from the inventories presented in **Table 4.16-1**; however, the data is representative of currently available global inventory data.

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3 The CO_2 equivalent emissions commonly are expressed as "million metric tons of carbon dioxide equivalent ($MMTCO_2e$)." The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP, such that $MMTCO_2e$ = (million metric tons of a GHG) x (GWP of the GHG). For example, the GWP for methane is 21. This means that the emission of one million metric tons of methane is equivalent to the emission of 21 million metric tons of CO_2.

4 The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2005 data, the UNFCCC data for the most recent year were used. United Nations Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF," http://unfccc.int/ghg_emissions_data/ghg_data_from_unfccc/time_series_annex_i/ items/3841.php and "Flexible GHG Data Queries" with selections for total GHG emissions excluding LULUCF/LUCF, all years, and non-Annex I countries, http://unfccc.int/di/FlexibleQueries/Event.do?event= showProjection. n.d.

Table 4.16-1
Top Five GHG Producer Countries and the European Union (Annual)

Emitting Countries	GHG Emissions ($MMTCO_2e$)
China	7,250
United States	7,217
European Union (EU), 27 Member States	5,402
Russian Federation	2,202
India	1,863
Japan	1,412
Total	**25,346**

Source: World Resources Institute, "Climate Analysis Indicators Tool (CAIT)," http://cait.wri.org/. 2010. Excludes emissions and removals from land use, land-use change and forestry (LULUCF).
Note: Emissions for Annex I nations are based on 2007 data. Emissions for Non-Annex I nations (e.g., China, India) are based on 2005 data).

United States

As noted in **Table 4.16-1**, the United States was the number two producer of global GHG emissions. The primary GHG emitted by human activities in the United States was CO_2, representing approximately 84 percent of total GHG emissions (US EPA 2008). Carbon dioxide from fossil fuel combustion, the largest source of GHG emissions, accounted for approximately 80 percent of U.S. GHG emissions.[5]

State of California

CARB compiles GHG inventories for the State of California. Based on the 2008 GHG inventory data (i.e., the latest year for which data are available), California emitted 474 $MMTCO_2e$ ***including*** emissions resulting from imported electrical power in 2008.[6] Based on the CARB inventory data and GHG inventories compiled by the World Resources Institute, California's total Statewide GHG emissions rank second in the United States (Texas is number one) with emissions of 417 $MMTCO_2e$ ***excluding*** emissions related to imported power.[7]

The primary contributors to GHG emissions in California are transportation, electric power production from both in-state and out-of-state sources, industry, agriculture and forestry, and other sources, which

5 *Supra* no. 4.

6 California Air Resources Board, "California Greenhouse Gas 2000-2008 Inventory by Scoping Plan Category - Summary," http://www.arb.ca.gov/cc/inventory/data/data.htm. 2010.

7 Ibid.

include commercial and residential activities. **Table 4.16-2, GHG Emissions in California**, provides a summary of GHG emissions reported in California in 1990 and 2008 separated by categories defined by the United Nations Intergovernmental Panel on Climate Change (IPCC).

Table 4.16-2
GHG Emissions in California

Source Category	1990 ($MMTCO_2e$)	Percent of Total	2008 ($MMTCO_2e$)	Percent of Total
ENERGY	**386.41**	**89.2%**	**413.80**	**86.6%**
Energy Industries	157.33	36.3%	171.23	35.8%
Manufacturing Industries & Construction	24.24	5.6%	16.67	3.5%
Transport	150.02	34.6%	173.94	36.4%
Other (Residential/Commercial/Institutional)	48.19	11.1%	46.59	9.8%
Non-Specified	1.38	0.3%	0.00	0.0%
Fugitive Emissions from Oil & Natural Gas	2.94	0.7%	3.28	0.7%
Fugitive Emissions from Other Energy Production	2.31	0.5%	2.09	0.4%
INDUSTRIAL PROCESSES & PRODUCT USE	**18.34**	**4.2%**	**30.11**	**6.3%**
Mineral Industry	4.85	1.1%	5.35	1.1%
Chemical Industry	2.34	0.5%	0.06	0.0%
Non-Energy Products from Fuels & Solvent Use	2.29	0.5%	1.97	0.4%
Electronics Industry	0.59	0.1%	0.80	0.2%
Substitutes for Ozone Depleting Substances	0.04	0.0%	13.89	2.9%
Other Product Manufacture and Use	3.18	0.7%	1.66	0.3%
Other	5.05	1.2%	6.39	1.3%
AGRICULTURE, FORESTRY, & OTHER LAND USE	**19.11**	**4.16%**	**24.162**	**5.1%**
Livestock	11.67	2.7%	16.28	3.4%
Land	0.19	0.0%	0.19	0.0%
Aggregate Sources & Non-CO_2 Sources on Land	7.26	1.7%	7.95	1.7%
WASTE	**9.42**	**2.2%**	**9.41**	**2.0%**
Solid Waste Disposal	6.26	1.4%	6.71	1.4%
Wastewater Treatment & Discharge	3.17	0.7%	2.70	0.6%
EMISSIONS SUMMARY				
Gross California Emissions	433.29		477.74	
Sinks from Forests and Rangelands	-6.69		-3.98	
Net California Emissions	426.60		473.76	

Sources:
[1] *California Air Resources Board, "California Greenhouse Gas 1990-2004 Inventory by IPCC Category - Summary," http://www.arb.ca.gov/cc/inventory/archive/archive.htm. 2010.*
[2] *California Air Resources Board, "California Greenhouse Gas 2000-2008 Inventory by IPCC Category - Summary," http://www.arb.ca.gov/cc/inventory/data/data.htm. 2010.*

Between 1990 and 2008, the population of California grew by approximately 7.3 million (from 29.8 to 37.9 million).[8] This represents an increase of approximately 27.2 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from $788 billion in 1990 to $1.8 trillion in 2008 representing an increase of approximately 128 percent (over twice the 1990 gross State product).[9] Despite the population and economic growth, California's net GHG emissions only grew by approximately 11 percent. The California Energy Commission (CEC) attributes the slow rate of growth to the success of California's renewable energy programs and its commitment to clean air and clean energy.[10]

Global Ambient CO_2 Concentrations

Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of carbon dioxide, methane, and nitrous oxide from before the start of industrialization, around 1750, to over 650,000 years ago. For that period, it was found that carbon dioxide concentrations ranged from 180 ppm to 300 ppm. For the period from around 1750 to the present, global carbon dioxide concentrations increased from a pre-industrialization period concentration of 280 ppm to 379 ppm in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range (California Energy Commission 2006). Global methane and nitrous oxide concentrations show similar increases for the same period (see **Table 4.16-3, Comparison of Global Pre-Industrial and Current GHG Concentrations**).

Table 4.16-3
Comparison of Global Pre-Industrial and Current GHG Concentrations

Greenhouse Gas	Early Industrial Period Concentrations (ppm)	Natural Range for Last 650,000 Years (ppm)	2005 Concentrations (ppm)
Carbon Dioxide (CO_2)	280	180 to 300	379
Methane (CH_4)	715	320 to 790	1774
Nitrous Oxide (N_2O)	270	NA	319

Source: Intergovernmental Panel on Climate Change, Climate Change 2007: The Physical Science Basis, Summary for Policymakers, *2000.*

8 US Census Bureau, "Data Finders," http://www.census.gov/. 2009; California Department of Finance, "E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-1008, with 2000 Benchmark," http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2009/. 2010.

9 California Department of Finance, "Financial & Economic Data: Gross Domestic Product, California," http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Misc.htm. 2010. Amounts are based on current dollars as of the data of the report. June 2, 2009.

10 California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004*, 2006.

4.16.3 REGULATORY FRAMEWORK

4.16.3.1 Intergovernmental Panel on Climate Change

The World Meteorological Organization (WMO) and United Nations Environmental Program (UNEP) established the IPCC in 1988. The goal of the IPCC is to evaluate the risk of climate change caused by human activities. Rather than performing research or monitoring climate, the IPCC relies on peer-reviewed and published scientific literature to make its assessment. While not a regulatory body, the IPCC assesses information (i.e., scientific literature) regarding human-induced climate change and the impacts of human-induced climate change, and recommends options to policy makers for the adaptation and mitigation of climate change. The IPCC reports its evaluations in special reports called "assessment reports." The latest assessment report (i.e., Fourth Assessment Report, consisting of three working group reports and a synthesis report based on the first three reports) was published in 2007.[11] In its 2007 report, the IPCC stated that global temperature increases since the mid-20th century were "very likely" attributable to man-made activities (greater than 90 percent certainty) (IPCC 2007).

4.16.3.2 Federal

In *Massachusetts vs. EPA*, the Supreme Court held that United States Environmental Protection Agency (US EPA) has the statutory authority under Section 202 of the Clean Air Act (CAA) to regulate GHGs from new motor vehicles. The court did not hold that the US EPA was required to regulate GHG emissions; however, it indicated that the agency must decide whether GHGs from motor vehicles cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare. Upon the final decision, the President signed Executive Order 13432 on May 14, 2007, directing the US EPA, along with the Departments of Transportation, Energy, and Agriculture, to initiate a regulatory process that responds to the Supreme Court's decision.

In December 2007, the President signed the Energy Independence and Security Act of 2007, which sets a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022 and sets a national fuel economy standard of 35 miles per gallon by 2020. The act also contains provisions for energy efficiency in lighting and appliances and for the implementation of green building technologies in federal buildings. On July 11, 2008, the US EPA issued an Advanced Notice of Proposed Rulemaking (ANPRM) on regulating GHGs under the CAA. The ANPRM reviews the various CAA provisions that may be applicable to the regulation of GHGs and presents potential regulatory approaches and technologies for reducing GHG emissions. On April 10, 2009, the US EPA published the Proposed Mandatory Greenhouse Gas Reporting Rule in the *Federal Register* (US EPA 2009). The rule was

11 The IPCC's Fourth Assessment Report is available online at http://www.ipcc.ch/.

adopted on September 22, 2009 and covers approximately 10,000 facilities nationwide, accounting for 85 percent of US GHG emissions.

On September 15, 2009, the US EPA and the Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) issued a joint proposal to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles that will reduce GHG emissions and improve fuel economy. The proposed standards would be phased in and would require passenger cars and light-duty trucks to comply with a declining emissions standard. In 2012, passenger cars and light-duty trucks would have to meet an average standard of 295 grams of CO_2 per mile and 30.1 miles per gallon. By 2016, the vehicles would have to meet an average standard of 250 grams of CO_2 per mile and 35.5 miles per gallon.[12] These standards were formally adopted by the US EPA and DOT on April 1, 2010.

On December 7, 2009, the US EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere threaten the public health and welfare of current and future generations.

- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

While these findings do not impose additional requirements on industry or other entities, this action was a prerequisite to finalizing the US EPA's proposed GHG emissions standards for light-duty vehicles, which were jointly proposed by the US EPA and DOT. On April 1, 2010, the US EPA and NHTSA issued final rules requiring that by the 2016 model-year, manufacturers must achieve a combined average vehicle emission level of 250 grams of CO_2 per mile, which is equivalent to 35.5 miles per gallon as measured by US EPA standards. These agencies are currently in the process of developing similar regulations for the 2017-2025 model years.

12 The CO_2 emission standards and fuel economy standards stated are based on US EPA formulas.

4.16.3.3 State

Title 24 Building Standards Code

The California Energy Commission first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods. The latest revisions were adopted in 2008 and became effective on January 1, 2010.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CALGreen Code). The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality (California Building Standards Commission 2009). The CALGreen Code is not intended to substitute or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission (CBSC). The CBSC has released a *2010 Draft California Green Building Standards Code* on its website (California Building Standards Commission 2010). The update to Part 11 of the Title 24 Building Standards Code became effective on January 1, 2011. Unless otherwise noted in the regulation, all newly constructed buildings in California are subject of the requirements of the CALGreen Code.

Assembly Bill 1493

In response to the transportation sector's contribution of more than half of California's CO_2 emissions, Assembly Bill 1493 (AB 1493, Pavley) was enacted on July 22, 2002. AB 1493 requires CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles whose primary use is noncommercial personal transportation. CARB adopted the standards in September 2004. The new standards will be phased in during the 2009–2016 model years. When fully phased in, the near term (2009–2012) standards will result in a reduction of about 22 percent in GHG emissions compared to the emissions from the 2002 fleet, while the midterm (2013–2016) standards will result in a reduction of about 30 percent.

Before these regulations may go into effect, the US EPA must grant California a waiver under the federal CAA, which ordinarily preempts state regulation of motor vehicle emission standards. On June 30, 2009, the US EPA formally approved California's waiver request. However, in light of the September 15, 2009, announcement by the US EPA and NHTSA regarding the national program to reduce vehicle GHG emissions, California—and states adopting California emissions standards—have agreed to defer to the proposed national standard through model year 2016 if granted a waiver by the US EPA. The 2016 endpoint of the two standards is similar, although the national standard ramps up slightly more slowly than required under the California standard. The Pavley standards require additional reductions in CO_2 emissions beyond 2016 (referred to as Phase II standards). While the Phase II standards have yet to be fully developed, CARB's has made it clear that the state intends to pursue additional reductions from motor vehicles in the 2017 through 2020 timeframe under the California Global Warming Solutions Act of 2006.

Executive Order S-3-05 and the Climate Action Team

In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The Secretary of Cal/EPA is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agency representatives involved in the GHG reduction plan include the Secretary of the Business, Transportation and Housing Agency, the Secretary of the Department of Food and Agriculture, the Secretary of the Resources Agency, the Chairperson of CARB, the Chairperson of the CEC, and the President of the Public Utilities Commission.

Representatives from each of the aforementioned agencies comprise the Climate Action Team. The Cal/EPA secretary is required to submit a biannual progress report from the Climate Action Team to the governor and state legislature disclosing the progress made toward GHG emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California's water supply, public health, agriculture, coastline, and forests, and reporting possible mitigation and adaptation plans to combat these impacts. Some strategies currently being implemented by state agencies include CARB introducing vehicle climate change standards and diesel anti-idling measures, the Energy Commission implementing building and appliance efficiency standards, and the Cal/EPA implementing their green building initiative. The Climate Action Team also recommends future emission reduction strategies, such as using only low-GWP refrigerants in new vehicles, developing ethanol as an alternative fuel, reforestation, solar power initiatives for homes and businesses, and investor-owned utility energy efficiency programs. According to the report, implementation of current and future emission reduction strategies have the potential to achieve the goals set forth in Executive Order S-3-05.

Assembly Bill 32

In furtherance of the goals established in Executive Order S-3-05, the legislature enacted Assembly Bill 32 (AB 32, Nuñez and Pavley), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006. AB 32 represents the first enforceable statewide program to limit GHG emissions from all major industries with penalties for noncompliance. AB 32 requires the State to undertake several actions – the major requirements are discussed below:

CARB Early Action Measures

CARB is responsible for carrying out and developing the programs and requirements necessary to achieve the goal of AB 32—the reduction of California's GHG emissions to 1990 levels by 2020. The first action under AB 32 resulted in CARB's adoption of a report listing three specific early-action greenhouse gas emission reduction measures on June 21, 2007. On October 25, 2007, CARB approved six additional early-action GHG reduction measures under AB 32. CARB has adopted regulations for all early action measures. The early-action measures are divided into three categories:

- Group 1 – GHG rules for immediate adoption and implementation
- Group 2 – Several additional GHG measures under development
- Group 3 – Air pollution controls with potential climate co-benefits

The original three adopted early-action regulations meeting the narrow legal definition of "discrete early-action GHG reduction measures" include:

- A low-carbon fuel standard to reduce the "carbon intensity" of California fuels;
- Reduction of refrigerant losses from motor vehicle air conditioning system maintenance to restrict the sale of "do-it-yourself" automotive refrigerants; and
- Increased methane capture from landfills to require broader use of state-of-the-art methane capture technologies.

The six additional early-action regulations adopted on October 25, 2007, also meeting the narrow legal definition of "discrete early-action GHG reduction measures," include:

- Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology;
- Reduction of auxiliary engine emissions of docked ships by requiring port electrification;
- Reduction of perfluorocarbons from the semiconductor industry;

- Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products);
- The requirement that all tune-up, smog check and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency; and
- Restriction on the use of sulfur hexafluoride (SF6) from non-electricity sectors if viable alternatives are available.

State of California Greenhouse Gas Inventory and 2020 Limit

As required under AB 32, on December 6, 2007, CARB approved the 1990 greenhouse gas emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 $MMTCO_2e$. CARB also projected the state's 2020 GHG emissions under "business as usual" (BAU) conditions—that is, emissions that would occur without any plans, policies, or regulations to reduce GHG emissions. CARB used an average of the State's GHG emissions from 2002 through 2004 and projected the 2020 levels based on population and economic forecasts. The projected net emissions totaled approximately 596 $MMTCO_2e$. Therefore, the state must reduce its 2020 BAU emissions by approximately 29 percent in order to meet the 1990 target.

The inventory revealed that in 1990, transportation, with 35 percent of the state's total emissions, was the largest single sector, followed by industrial emissions, 24 percent; imported electricity, 14 percent; in-state electricity generation, 11 percent; residential use, 7 percent; agriculture, 5 percent; and commercial uses, 3 percent (these figures represent the 1990 values, compared to **Table 4.16-2**, which presents 2006 values). AB 32 does not require individual sectors to meet their individual 1990 GHG emissions inventory; the total statewide emissions are required to meet the 1990 threshold by 2020.

CARB Mandatory Reporting Requirements

In addition to the 1990 emissions inventory, CARB also adopted regulations requiring the mandatory reporting of GHG emissions for large facilities on December 6, 2007. The mandatory reporting regulations require annual reporting from the largest facilities in the state, which account for approximately 94 percent of point source greenhouse gas emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity-generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 tons of carbon dioxide each year from on-site stationary combustion sources. Transportation sources, which account for 38 percent of California's total greenhouse gas emissions, are not covered by these regulations but will continue to be tracked through existing means. Affected facilities will begin tracking their emissions in

2008, to be reported beginning in 2009, with a phase-in process to allow facilities to develop reporting systems and train personnel in data collection. Emissions for 2008 may be based on best available emission data. Beginning in 2010, however, emissions reporting requirements will be more rigorous and will be subject to third-party verification. Verification will take place annually or every three years, depending on the type of facility.

AB 32 Climate Change Scoping Plan

As indicated above, AB 32 requires CARB to adopt a scoping plan indicating how reductions in significant GHG sources will be achieved through regulations, market mechanisms, and other actions. After receiving public input on their discussion draft of the *Climate Change Proposed Scoping Plan* released in June 2008, CARB released the *Climate Change Proposed Scoping Plan* in October 2008 that contains an outline of the proposed state strategies to achieve the 2020 greenhouse gas emission limits. The CARB Governing Board approved the *Climate Change Scoping Plan* on December 11, 2008. Key elements of the Scoping Plan include the following recommendations:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

Under the Scoping Plan, approximately 85 percent of the state's emissions are subject to a cap-and-trade program where covered sectors are placed under a declining emissions cap. The emissions cap incorporates a margin of safety whereas the 2020 emissions limit will still be achieved even in the event that uncapped sectors do not fully meet their anticipated emission reductions. Emissions reductions will be achieved through regulatory requirements and the option to reduce emissions further or purchase allowances to cover compliance obligations. It is expected that emission reduction from this cap-and-trade program will account for a large portion of the reductions required by AB 32.

Table 4.16-4, AB 32 Scoping Plan Measures (SPMs), lists CARB's preliminary recommendations for achieving GHG emissions reductions under AB 32 along with a brief description of the requirements and applicability.

Table 4.16-4
AB 32 Scoping Plan Measures (SPMs)

Scoping Plan Measure	Description
SPM-1: California Cap-and-Trade Program linked to Western Climate Initiative	Implement a broad-based cap-and-trade program that links with other Western Climate Initiative Partner programs to create a regional market system. Ensure California's program meets all applicable AB 32 requirements for market-based mechanisms. Capped sectors include transportation, electricity, natural gas, and industry. Projected 2020 business-as-usual emissions are estimated at 512 $MTCO_2e$; preliminary 2020 emissions limit under cap-and-trade program are estimated at 365 $MTCO_2e$ (29 percent reduction).
SPM-2: California Light-Duty Vehicle GHG Standards	Implement adopted Pavley standards and planned second phase of the program. AB 32 states that if the Pavley standards (AB 1493) do not remain in effect, CARB shall implement equivalent or greater alternative regulations to control mobile sources.
SPM-3: Energy Efficiency	Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts. The Scoping Plan considers green building standards as a framework to achieve reductions in other sectors, such as electricity.
SPM-4: Renewables Portfolio Standard	Achieve 33 percent Renewables Portfolio Standard by both investor-owned and publicly owned utilities.
SPM-5: Low Carbon Fuel Standard	CARB identified the Low Carbon Fuel Standard as a Discrete Early Action item and the final regulation was adopted on April 23, 2009. In January 2007, Governor Schwarzenegger issued Executive Order S-1-07, which called for the reduction of the carbon intensity of California's transportation fuels by at least 10 percent by 2020.
SPM-6: Regional Transportation-Related Greenhouse Gas Targets	Develop regional greenhouse gas emissions reduction targets for passenger vehicles. SB 375 requires CARB to develop, in consultation with metropolitan planning organizations (MPOs), passenger vehicle greenhouse gas emissions reduction targets for 2020 and 2035 by September 30, 2010. SB 375 requires MPOs to prepare a sustainable communities strategy to reach the regional target provided by CARB.
SPM-7: Vehicle Efficiency Measures	Implement light-duty vehicle efficiency measures. CARB is pursuing fuel-efficient tire standards and measures to ensure properly inflated tires during vehicle servicing.
SPM-8: Goods Movement	Implement adopted regulations for port drayage trucks and the use of shore power for ships at berth. Improve efficiency in goods movement operations.
SPM-9: Million Solar Roofs Program	Install 3,000 MW of solar-electric capacity under California's existing solar programs.

Scoping Plan Measure	Description
SPM-10: Heavy/Medium-Duty Vehicles	Adopt heavy- and medium-duty vehicle and engine measures targeting aerodynamic efficiency, vehicle hybridization, and engine efficiency.
SPM-11: Industrial Emissions	Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.
SPM-12: High Speed Rail	Support implementation of a high-speed rail (HSR) system. This measure supports implementation of plans to construct and operate a HSR system between Northern and Southern California serving major metropolitan centers.
SPM-13: Green Building Strategy	Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.
SPM-14: High GWP Gases	Adopt measures to reduce high global warming potential gases. The Scoping Plan contains 6 measures to reduce high-GWP gases from mobile sources, consumer products, stationary sources, and semiconductor manufacturing.
SPM-15: Recycling and Waste	Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.
SPM-16: Sustainable Forests	Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation. The federal government and California's Board of Forestry and Fire Protection have the regulatory authority to implement the Forest Practice Act to provide for sustainable management practices. This measure is expected to play a greater role in the 2050 goals.
SPM-17: Water	Continue efficiency programs and use cleaner energy sources to move water. California will also establish a public goods charge for funding investments in water efficiency that will lead to as yet undetermined reductions in greenhouse gases.
SPM-18: Agriculture	In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020. Increase efficiency and encourage use of agricultural biomass for sustainable energy production. CARB has begun research on nitrogen fertilizers and will explore opportunities for emission reductions.

Source: California Air Resources Board, Climate Change Scoping Plan, (2008).

Executive Order S-1-07 (Low Carbon Fuel Standard)

On January 18, 2007, California further solidified its dedication to reducing GHGs by setting a new Low Carbon Fuel Standard (LCFS) for transportation fuels sold within the state. Executive Order S-1-07 sets a declining standard for GHG emissions measured in CO_2-equivalent gram per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10 percent by 2020. The LCFS will apply to refiners, blenders, producers, and importers of transportation fuels and will use market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods. The executive order requires the Secretary of Cal/EPA to coordinate with the CEC, CARB, the University of California, and other agencies to develop a protocol to measure the "life-cycle carbon intensity" of transportation fuels. CARB released a draft version of the LCFS in October 2008 and adopted the final regulation on April 23, 2009.

Senate Bill 97 (CEQA Guidelines)

In August 2007, the legislature enacted SB 97 (Dutton), which directed the Governor's Office of Planning and Research (OPR) to develop guidelines under CEQA for the mitigation of greenhouse gas emissions. A number of actions have taken place under SB 97, which are discussed below.

OPR Climate Change Technical Advisory

On June 19, 2008, OPR issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents (OPR 2008). The advisory indicated that a project's GHG emissions, including those associated with vehicular traffic, and construction activities, should be identified and estimated. The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures that are necessary to reduce GHG emissions to a less than significant level. The advisory did not recommend a specific threshold of significance. Instead, OPR requested that CARB recommend a method for setting thresholds that lead agencies may adopt (OPR 2009).

CEQA Guideline Amendments

In its work to formulate CEQA Guideline Amendments for GHG emissions, OPR submitted the *Proposed Draft CEQA Guideline Amendments for Greenhouse Gas Emissions* to the Secretary for Natural Resources on April 13, 2009. The Natural Resources Agency conducted formal rulemaking procedures in 2009 and adopted the CEQA Guideline Amendments on December 30, 2009. They became effective in March 2010.

Senate Bill 375

The California Legislature passed Senate Bill 375 (SB 375) on September 1, 2008, and SB 375 was signed by Governor Schwarzenegger and chaptered into law on September 30, 2008. SB 375 requires CARB, working in consultation with the metropolitan planning organizations (MPOs), to set regional greenhouse gas reduction targets for the automobile and light truck sector for 2020 and 2035. CARB must provide each MPO with its reduction target by September 30, 2010. The target must then be incorporated within that region's Regional Transportation Plan (RTP), which is used for long-term transportation planning, in a Sustainable Communities Strategy (SCS). Certain transportation planning and programming activities would then need to be consistent with the SCS; however, SB 375 expressly provides that the SCS does not regulate the use of land, and further provides that local land use plans and policies (e.g., general plan) are not required to be consistent with either the RTP or SCS.

In accordance with SB 375, on January 23, 2009, CARB appointed a Regional Targets Advisory Committee (RTAC) to provide recommendations and methodologies to be used in the target setting process. The RTAC provided its recommendations in a report to CARB on September 29, 2009. On August 9, 2010, CARB staff issued the *Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant To Senate Bill 375*.[13] CARB staff proposed draft reduction targets for the four largest MPOs (Bay Area, Sacramento, Southern California, and San Diego) of 7 to 8 percent for 2020 and reduction targets between 13 to 16 percent for 2035. For the Southern California Association of Governments (SCAG), which is the MPO for the region in which the proposed project is located, CARB established a draft target of 8 percent for 2020 and 13 percent for 2035, subject to SCAG Board approval. CARB staff proposed a draft reduction target for the combined San Joaquin Valley MPOs of 5 percent for 2020 and 10 percent for 2035, acknowledging that the growth rate in the San Joaquin Valley is projected to be double that of most other areas of California. The remaining six MPOs represent about 5 percent of both the State's greenhouse gas emissions and vehicle miles traveled from passenger vehicles. For these MPOs, CARB staff is proposing to use the most current greenhouse gas per capita projections from each MPO, adjusted for the impacts of the recession, as the basis for individual MPO targets for this first target-setting cycle. This approach allows the focus of this first target-setting cycle to appropriately remain on the largest and fastest growing regions of the state. Of note, the proposed reduction targets explicitly exclude emission reductions expected from the AB 1493 and low carbon fuel standard regulations. CARB adopt the final targets (the same targets as the proposed draft targets) on September 23, 2010.

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13 California Air Resources Board, *Staff Report: Proposed Regional Greenhouse Gas Emission Reduction Targets For Automobiles And Light Trucks Pursuant To Senate Bill 375*, (2010).

California Climate Action Registry

The California Climate Action Registry (CCAR) is a private non-profit organization formed by the State of California that serves as a voluntary GHG registry to protect and promote early actions to reduce GHG emissions by organizations. Senate Bill 1771 (SB 1771, Sher) formally established the CCAR with technical changes made to the statute in SB 527, which finalized the structure of the CCAR. The CCAR began with 23 charter members and currently has over 300 corporations, universities, cities and counties, government agencies and environment organizations voluntarily measuring, monitoring, and publicly reporting their GHG emissions using the CCAR protocols. The CCAR has published a General Reporting Protocol, as well as project- and industry-specific protocols for landfill activities, livestock activities, the cement sector, the power/utility sector, and the forest sector. The protocols provide the principles, approach, methodology, and procedures required for participation in the CCAR.

Due to the growth of the CCAR, it now operates under the Climate Action Reserve,[14] which is a national offsets program for the United States carbon market. As part of this transition, the California Climate Action Registry was instrumental in establishing The Climate Registry, with the mission of expanding the California Registry's emissions reporting work to include all of North America.[15] Emissions inventory reporting is being transitioned to The Climate Registry, and reports for the 2009 reporting year were the last the California Registry accepted. However, even after that year, the California Registry will continue to make its members' historical emissions reports available.

CAPCOA CEQA and Climate Change White Paper

The California Air Pollution Control Officers Association (CAPCOA) prepared a white paper on CEQA and Climate Change in January 2008. The white paper contains a disclaimer that states the paper is intended to be used as a resource by lead agencies when considering policy options and not as a guidance document. The disclaimer also states that it "is not intended, and should not be interpreted, to dictate the manner in which an air district or lead agency chooses to address GHG emissions in the context of its review of projects under CEQA" (CAPCOA 2008). Specifically, the white paper discusses three possible approaches to evaluating the significance of GHG emissions and possible mitigation measures; however, CAPCOA does not endorse any particular approach. The three alternative significance approaches are (1) not establishing a significance threshold for GHG emissions, (2) setting the GHG emission threshold at zero, and (3) setting the GHG emission threshold at some non-zero level. The white paper evaluates

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14 Additional information about the Climate Action Reserve may be obtained at the following Web site: http://www.climateactionreserve.org/.

15 Additional information about The Climate Registry may be obtained at the following Web site: http://www.theclimateregistry.org/.

potential considerations and pitfalls associated with the three approaches. At the end of the white paper, CAPCOA provides a list of potential mitigation measures and discusses each in terms of emissions reduction effectiveness, cost effectiveness, and technical and logistical feasibility.

CARB Proposal for Significance Thresholds for GHGs under CEQA

On October 24, 2008, CARB staff released a draft and preliminary proposal for determining whether the emissions related to proposed new projects are significant impacts under CEQA. While the proposal is focused on helping lead agencies determine under which conditions a project may be found exempt from the preparation of an EIR, the proposal also provides a guide for establishing significance thresholds for projects for which EIRs would be prepared regardless of the project's climate change impact. According to this proposal, the threshold for determining whether a project's emissions are significant is not zero emissions, but must be a stringent performance-based threshold to meet the requirements of AB 32. If the project meets certain specific yet to be developed performance standards for several categories of emissions, including construction emissions, building energy use, water use, solid waste, and transportation, and the project emits no more than a certain to be determined amount of metric tons of carbon equivalents per year, the project's impact would not be significant. According to CARB, California Energy Commission Tier II building energy use standards are proposed to be used, which generally require a reduction in energy usage of 30 percent beyond Title 24 building code requirements. CARB has also proposed a 7,000 metric ton carbon dioxide equivalent ($MTCO_2e$) threshold for industrial projects, but has not yet proposed thresholds for residential and commercial projects. The annual threshold does not explicitly include emissions associated with construction- and transportation-related activities. The draft proposal was very controversial and CARB staff no longer has any plans to move forward with any final threshold. A key preliminary conclusion from the draft threshold, however, was that CARB staff, in setting a numerical threshold for industrial projects and suggesting performance standards, does not believe in 'zero threshold' mandated by CEQA.

4.16.3.4 Regional Programs

In April 2008, the South Coast Air Quality Management District (SCAQMD), in order to provide guidance to local lead agencies on determining the significance of GHG emissions identified in CEQA documents, convened a "GHG CEQA Significance Threshold Working Group."[16] The goal of the working group is to develop and reach consensus on an acceptable CEQA significance threshold for GHG emissions that would be utilized on an interim basis until CARB (or some other state agency) develops statewide guidance on assessing the significance of GHG emissions under CEQA.

16 For more information see: http://www.aqmd.gov/ceqa/handbook/GHG/GHG.html.

Initially, SCAQMD staff presented the working group with a significance threshold that could be applied to various types of projects – residential; non-residential; industrial; etc. However, the threshold is still under development. In December 2008, staff presented the SCAQMD Governing Board with a significance threshold for stationary source projects where it is the lead agency. This threshold uses a tiered approach to determine a project's significance, with 10,000 metric tons of carbon dioxide equivalent ($MTCO_2e$) as a screening numerical threshold.

At present time, the SCAQMD has not adopted thresholds for projects such as the one analyzed in this EIR. The SCAQMD is considering a tiered approach to determine the significance of residential and commercial projects. The draft approach that was published in October 2008 is as follows (SCAQMD 2008):

- Tier 1: Is the project exempt from further analysis under existing statutory or categorical exemptions? If yes, there is a presumption of less than significant impacts with respect to climate change.

- Tier 2: Is the project's GHG emissions within the GHG budgets in an approved regional plan? (The plan must be consistent with CEQA Guidelines §§15064(h)(3), 15125(d), or 15152(s).) If yes, there is a presumption of less than significant impacts with respect to climate change.

- Tier 3: Is the project's incremental increase in GHG emissions below or mitigated to less than the significance screening level (10,000 $MTCO_2e$ per year for industrial projects and 3,000 $MTCO_2e$ for commercial/residential projects) and is the project X percent beyond the Title 24 standard and achieve Y percent reduction in water use (the X and Y values were not determined at the time the draft approach was published)? If yes, there is a presumption of less than significant impacts with respect to climate change.

- Tier 4: Does the project meet one of the following performance standards (the performance standards were not well-defined at the time the draft approach was published)? If yes, there is a presumption of less than significant impacts with respect to climate change.

  – Option #1: Uniform Percent Emission Reduction Target Objective (e.g., 30 percent) from BAU by incorporating project design features and/or implementing emission reduction measures.

  – Option #2: Early Implementation of Applicable AB 32 Scoping Plan Measures.

  – Option #3: Achieve sector-based standard (e.g., pounds per person, pounds per square foot, etc.).

- Tier 5: Does the project obtain offsets alone or in combination with the above to achieve the target significance screening level (offsets provided for 30-year project life, unless project life limited by permit, lease, or other legally binding conditions)? If yes, there is a presumption of less than significant impacts with respect to climate change. Otherwise, the project is significant.

In September 2010, the following revisions were proposed for Tiers 3 and 4 (SCAQMD 2010):

- Tier 3: Is the project's incremental increase in GHG emissions below or mitigated to less than the significance screening level (10,000 $MTCO_2e$ per year for industrial projects; 3,500 $MTCO_2e$ for residential projects; 1,400 $MTCO_2e$ for commercial projects; 3,000 $MTCO_2e$ for mixed-use or all land use projects)? If yes, there is a presumption of less than significant impacts with respect to climate change.

- Tier 4: Does the project meet one of the following performance standards? If yes, there is a presumption of less than significant impacts with respect to climate change.

  – Option #1: Achieve some percentage reduction in GHG emissions from a base case scenario, including land use sector reductions from AB 32 (e.g., 29 percent reduction as recommended by the San Joaquin Valley Air Pollution Control District).

  – Option #2: For individual projects, achieve a project-level efficiency target of 4.8 $MTCO_2e$ per service population by 2020 or a target of 3.0 $MTCO_2e$ per service population by 2035. For plans, achieve a plan-level efficiency target of 6.6 MTCO2e per service population by 2020 or a target of 4.1 $MTCO_2e$ per service population by 2035.

The SCAQMD has not announced when staff is expecting to present a finalized version of these thresholds to the Governing Board. The SCAQMD has also adopted Rules 2700, 2701, and 2702 that establishes a GHG reduction program within the SCAQMD; however, GHG emission reduction protocols pursuant to these rules have only been established for boilers and process heaters, forestry, and manure management reduction projects.

4.16.3.5 Applicable Local Plans and Policies

University of California Policy on Sustainable Practices

The University of California Policy on Sustainable Practices was issued by the UC President in 2004 and revised in January 2006, March 2007 and September 2009. The policy was developed to standardize campus practices and is a system-wide commitment to minimize the University of California's impact on the environment and reduce the University's dependence on non-renewable energy sources. The University of California Policy on Sustainable Practices promotes the principles of energy efficiency and sustainability in the following areas:

- Green Building Design
- Clean Energy Standard
- Climate Protection Practices
- Sustainable Transportation Practices

- Sustainable Operations
- Recycling and Waste Management
- Environmentally Preferable Purchasing Practices
- Food

The policy guidelines that address these topics recommend that University operations:

- Incorporate the principles of energy efficiency and sustainability in all capital projects, operations and maintenance within budgetary constraints and programmatic requirements.
- Minimize the use of non-renewable energy sources on behalf of UC's built environment by creating a portfolio approach to energy use, including use of local renewable energy and purchase of green power from the grid as well as conservation measures that reduce energy consumption.
- Incorporate alternative means of transportation to/from and within the campus to improve the quality of life on campus and in the surrounding community. The campuses will continue their strong commitment to provide affordable on-campus housing, in order to reduce the volume of commutes to and from campus. These housing goals are detailed in the campuses' LRDPs.
  - Track, report and minimize GHG emissions on behalf of UC operations.
  - Minimize the amount of University-generated waste sent to landfill.
  - Utilize the University's purchasing power to meet its sustainability objectives.

The University of California has signed the American College and University Presidents Climate Commitment (ACUPCC). Each signatory commits to completing an inventory of GHG emissions within one year, and to developing, within two years, an institutional plan to achieve climate neutrality as soon as possible. The commitment also includes specific interim actions, including requiring that new campus construction will be built to at least the US Green Building Council's LEED Silver standard or equivalent; purchasing Energy Star appliances; offsetting greenhouse gas emissions generated by institutional air travel; encouraging and providing access to public transportation; purchasing or producing at least 15 percent of the institution's electricity consumption from renewable sources; supporting climate and sustainability shareholder proposals at companies where the institution's endowment is invested; and adopting measures to reduce waste.

UCR Climate Action Plan

As discussed earlier in this section, the UC Policy on Sustainable Practices – Climate Protection section targets three goals: reduction of GHG emissions back to 2000 levels by 2014, to 1990 levels by 2020, and ultimately climate neutrality. Climate neutrality is defined in the policy as the University having a net

zero impact on the Earth's climate, which is to be achieved by minimizing GHG emissions as much as possible, and using carbon offsets or other measures to mitigate the remaining GHG emissions.

UCR has prepared a Climate Action Plan (CAP), which covers the current operations and projected growth in operations of the campus through 2020. The CAP is available at http://acupcc.aashe.org/cap/379/. The CAP describes and addresses policy and regulatory requirements of (1) the UC Policy on Sustainable Practices, (2) AB 32, (3) ACUPCC, (4) CEQA, and (4) US EPA reporting requirements. Consistent with the UC Policy on Sustainable Practices, the UCR CAP establishes the goal for the Campus to reduce GHG emissions to 1990 levels by 2020. In addition, UCR is proposing to reduce its GHG emissions to 2000 levels by 2014.

The CAP provides documentation of how campus GHG emissions are calculated, a report of current (2008) emissions, estimates of past (to 1990) and future emissions (to 2020). The emissions reported in the CAP are separated into three groups:

- Scope 1 emissions which include direct emissions from area and stationary combustion sources and campus-owned vehicles;
- Scope 2 emissions which include indirect emissions related to the production and consumption of electricity;
- Scope 3 emissions which include other indirect emissions from sources such as commuting and water use. Construction emissions may also be included as Scope 3.

The CAP focuses on emissions from Scopes 1 and 2. The Campus does not report Scope 3 emissions in the verified inventories conducted annually, as these emissions are not requested by the greenhouse gas inventory registry that UC campuses use. Therefore, limited emissions data are currently available for calculating Scope 3 sources, though efforts are underway to expand data collection and reporting for Scope 3 sources.

The CAP established the 1990 emissions level for UCR at 50,854 $MTCO_2e$ for Scopes 1 and 2 emission sources. Scope 3 emissions from commuting and water use were estimated to be 26,471 MTCO2e in 1990. The total 1990 emissions are estimated at 77,321 $MTCO_2e$, which represents the target for 2020 GHG emissions under the CAP. In addition to establishing the 1990 emission levels, the CAP also established the 2000 emissions level at 78,824 $MTCO_2e$ for Scopes 1 and 2 emission sources, and 49,587 MTCO2e for Scope 3 emissions. The total 2000 emissions are estimated at 128,412 $MTCO_2e$, which represents the target for 2014 GHG emissions under the CAP.

The CAP includes a characterization of options and methods to reduce emissions, and a blueprint for future action. Emission reduction methods provided in the CAP are listed in **Appendix 4.16**.

4.16.4 IMPACTS AND MITIGATION MEASURES

4.16.4.1 Significance Criteria

The impacts related to GHG emissions resulting from the implementation of the 2005 LRDP Amendment 2 would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines*:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Under CEQA, "the determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data."[17] CEQA grants agencies with the general authority to adopt criteria for determining whether a given impact is "significant."[18] When no guidance exists under CEQA, the agency may look to and assess general compliance with comparable regulatory schemes.[19]

As discussed in **Section 4.16.3** above, some air quality management and air pollution control districts have adopted guidance documents for evaluating the significance of GHG emissions. Other districts have published draft guidance documents that have not yet been formally adopted. A summary of the available guidance documents from several air quality management and air pollution control districts is provided below. As listed below, the guidance documents do not provide a set of consistent thresholds for evaluating the significance of GHGs on the global climate.

- CARB published preliminary draft thresholds in 2008, but ceased further development of their threshold as of the date of this writing. The preliminary draft thresholds recommended that the significance of a project's GHG emissions should be based on compliance with a previously approved plan that addresses GHG emissions or compliance with performance standards relating to construction and operational activities (or equivalent GHG-reduction measures) and emitting no more than a yet to be determined quantity of GHG emissions. Projects that do not meet these thresholds would be considered to have a significance impact.

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17 *State CEQA Guidelines* Section 15064(b).

18 See *Cal. Pub. Resources Code § 21082*.

19 See *Protect Historic Amador Waterways v. Amador Water Agency (2004) 116 Cal. App. 4th 1099, 1107* ["'[A] lead agency's use of existing environmental standards in determining the significance of a project's environmental impacts is an effective means of promoting consistency in significance determinations and integrating CEQA environmental review activities with other environmental program planning and resolution."'"]. Lead agencies can, and often do, use regulatory agencies' performance standards. A project's compliance with these standards usually is presumed to provide an adequate level of protection for environmental resources. See, e.g., *Cadiz Land Co. v. Rail Cycle (2000) 83 Cal.App.4th 74, 106-09* (upholding use of regulatory agency performance standard).

- The San Joaquin Valley Air Pollution Control District (SJVAPCD) adopted the *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* in late 2009. According to the guidance, the SJVAPCD guidance recommends the use of best performance standards to assess the significance of GHG emissions. The SJVAPCD expects that compliance with the recommended best performance standards would reduce a project's GHG emissions by a target of 29 percent or more, compared to 'business as usual' (BAU) conditions. The 29 percent reduction target is based on the goal of AB 32, which is to reduce the State's GHG emissions to 1990 levels by 2020.

- The Sacramento Metropolitan Air Quality Management District (SMAQMD) has also adopted guidance recommending that project achieve a 29 percent reduction from BAU conditions.

- The Bay Area Air Quality Management District (BAAQMD) adopted revisions to its CEQA Guidelines in June 2010 that recommends a project-level significance threshold of 1,100 $MTCO_2e$ for residential and commercial projects or a project-level efficiency target of 4.6 $MTCO_2e$ per service population (residents plus employees) per year. The recommended plan-level significance thresholds are compliance with a qualified greenhouse gas reduction strategy (or similar criteria included in a General Plan) or a plan-level efficiency target of 6.6 $MTCO_2e$ per service population (residents plus employees) per year.

- The SCAQMD is currently developing thresholds for GHG emissions. As noted previously, the SCAQMD recommends a tiered approach. The Tier 3 threshold requires that a project's incremental increase in GHG emissions should be below or mitigated to less than the significance screening level (10,000 $MTCO_2e$ per year for industrial projects; 3,500 $MTCO_2e$ for residential projects; 1,400 $MTCO_2e$ for commercial projects; 3,000 $MTCO_2e$ for mixed-use or all land use projects). The Tier 4 threshold requires that projects achieve a 29 percent reduction from a base case scenario, including land use sector reductions from AB 32 (total emissions not to exceed 25,000 $MTCO_2e$) or achieve a project-level efficiency target of 4.8 $MTCO_2e$ per service population per year (total emissions not to exceed 25,000 $MTCO_2e$ per year). The proposed plan-level significance threshold is an efficiency target of 6.6 $MTCO_2e$ per service population per year by 2020.

While a wide array of thresholds and standards have been presented, the amendments to the *State CEQA Guidelines* reaffirm that the lead agency has the discretion to determine how to evaluate a project's significance under CEQA. The *State CEQA Guidelines* include a new Section 15064.16, which states that, when making a determination of the significance of GHG emissions, a lead agency shall have discretion to determine whether to use a model or methodology to quantify GHG emissions and/or rely on a qualitative analysis or performance-based standards.

Based on the above discussion, the Appendix G thresholds of the *State CEQA Guidelines* (Environmental Checklist Form) shall be assessed by performing an analysis of the project's GHG emissions from construction and operational activities. The significance of the project's impacts under the first Appendix G threshold will be assessed using the plan-level efficiency target of 6.6 $MTCO_2e$ per service population per year proposed by the SCAQMD and adopted by the BAAQMD. Compliance with an applicable plan, policy or regulation under the second Appendix G threshold will be analyzed using the UCR Climate

Action Plan and UC Policy on Sustainable Practices as the applicable plans and policies. Both the UCR CAP and the UC Policy are plans for reducing emissions of GHG according to AB 32 targets.

4.16.4.2 Methodology

OPR in its Technical Advisory has recommended that GHG emissions from project-related traffic, energy consumption, water usage, and construction activities, should be identified and estimated, to the extent that data is available to calculate such emissions. In addition, CARB staff has considered extensively the value of indirect emissions in a mandatory reporting program. CARB believes that indirect energy usage provides a more complete picture of the emissions footprint of a facility. According to CARB, "As facilities consider changes that would affect their emissions – addition of a cogeneration unit to boost overall efficiency even as it increases direct emissions, for example – the relative impact on total (direct plus indirect) emissions by the facility should be monitored. Annually reported indirect energy usage also aids the conservation awareness of the facility." For these reasons, CARB has proposed requiring the calculation of direct and indirect GHG emissions as part of the AB 32 reporting requirements, and this analysis does so (CARB 2007).

The California Air Pollution Control Officers Association (CAPCOA) has stated that the information needed to characterize GHG emissions from manufacture, transport, and end-of-life of construction materials (often referred to as lifecycle emissions) would be speculative at the CEQA analysis level (CAPCOA 2008). Since accurate and reliable data does not exist for estimating lifecycle emissions for the proposed project, the analysis does not assess such lifecycle GHG emissions.

The data sources and tools used to evaluate the GHG impacts associated with construction and operation of the proposed project include the URBEMIS2007 Environmental Management Software, and information provided in the *Software User's Guide [for] URBEMIS2007 for Windows* (Rimpo and Associates 2008) and calculation algorithms supported by the sources listed above. The URBEMIS2007 model utilizes the EMFAC2007 emissions factor model for on-road motor vehicle sources and the OFFROAD2007 emissions factor model for off-road equipment. Site-specific or project-specific data were used in the URBEMIS2007 model where available. Where information was not available for the project, model default values were selected.

Additional sources consulted for this analysis include data and guidance from the U.S. EPA, the U.S. Energy Information Administration, CARB, the California Energy Commission, the California Climate Action Registry's *General Reporting Protocol*, and other GHG and global climate change data as referenced. Emission calculations conducted for the proposed project are contained in **Appendix 4.16**.

4.16.4.3 Project Impacts and Mitigation Measures

The proposed project consists of the implementation of the UCR 2005 LRDP, amended by the proposed Amendment 2. At full development under the amended 2005 LRDP, the Campus would ultimately support (1) a total population of 41,393 persons, and (2) associated new facilities representing 8.4 million gross square feet (gsf) of building space in addition to the existing development of 6.5 million gsf, for a total of 14.9 million gsf.

Impact 4.16-1 **Campus development under the proposed 2005 LRDP Amendment 2 would generate substantial GHG emissions both directly and indirectly. Given UCR's existing commitments to reduce GHG emissions by over 70 percent from business-as-usual projections by 2020, this impact would be less than significant.**

Campus development under the 2005 LRDP, as amended by the proposed Amendment 2, would result in the generation of GHG emissions, both directly and indirectly. GHG emissions would be produced when future capital improvement projects are constructed under the amended 2005 LRDP. Once operational, these future capital improvement projects would result in additional emissions associated primarily with energy use within the new buildings and commuting of campus population. While it is not possible to predict at this time which specific projects would be proposed or constructed on the campus through 2020/21, a programmatic evaluation of the GHG emissions that would result from the Campus's entire development program under the 2005 LRDP as amended by the proposed Amendment 2 is presented below.

Construction Emissions

During construction, the proposed project would directly contribute to climate change through its contribution of the GHGs from the exhaust of construction equipment and construction workers' vehicles. The manufacture of construction materials used by the project would indirectly contribute to climate change (upstream emission source). Upstream emissions are emissions that are generated during the manufacture of products used for construction (e.g., cement, steel, and transport of materials to the region). The upstream GHG emissions for this project, which may also include perfluorocarbons and sulfur hexafluoride, are not estimated in this impact analysis because they are not within the control of the University and the lack of data precludes their quantification without speculation.

The primary GHG emissions during construction are CO_2, CH_4, and N_2O. These emissions are the result of fuel combustion by construction equipment and motor vehicles. The other GHGs defined by state law (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) are typically associated with specific

industrial sources and processes and would not be emitted during construction of the proposed project. The URBEMIS2007 Environmental Management Software was used to estimate the construction-related CO_2 emissions using the same assumptions described in **Section 4.3, Air Quality**, for the construction portion of the air quality analysis. Because detailed information regarding construction phasing and scheduling was not available for future projects proposed on the campus under the amended 2005 LRDP, it was assumed that demolition, grading, building construction, asphalt paving, and architectural coating activities would occur over 3 sequential and identical 3-year periods over the 9-year development time frame (assuming construction under the amended 2005 LRDP begins in 2012 and concludes in 2020). In reality, construction activity would occur in spurts as individual projects are designed in detail, approved, and constructed. However, while the year-to-year construction-related GHG emissions will vary, the total construction-related GHG emissions should adequately and reasonably reflect the full extent of development allowed under the amended 2005 LRDP. URBEMIS2007 only calculates CO_2 emissions and does not provide estimates of other GHGs associated with combustion (i.e., CH_4 and N_2O). Therefore, in order to account for emissions of these compounds, the following adjustments were made to the URBEMIS2007 emission calculations to convert CO_2 emissions to a CO_2e basis:

- **Construction Off-Road and On-Road Equipment.** The CO_2 emissions associated with off-road and on-road equipment were multiplied by a factor based on the assumption that CO_2 represents approximately 99.1 and 99.9 percent, respectively, of the CO_2e emissions. These assumptions were derived from the California Climate Action Registry (California Climate Action Registry 2009) and the California Energy Commission (California Energy Commission 2002).

- **Motor Vehicles (Workers)**. The CO_2 emissions associated with construction-related worker trips were multiplied by a factor based on the assumption that CO_2 represents 95 percent of the CO_2e emissions associated with passenger vehicles, which account for most of the project-related trips (US EPA 2005). The 95 percent factor accounts for CH_4, N_2O and fugitive GHG emissions associated with mobile source air conditioning equipment.

CARB has adopted measures that will reduce construction-related GHG emissions in its *Climate Change Scoping Plan* for AB 32. For instance, SPM-5, Low carbon fuel standard when in effect is expected to result in a 7.2 percent reduction in transportation GHG emissions); SPM-7, Vehicle efficiency measures for passenger vehicles is expected to reduce transportation GHG emissions by 2.8 percent; and SPM-10, Vehicle hybridization and energy efficiency standards adopted for medium- and heavy-duty vehicles are expected to result in a 2.9 percent reduction in transportation GHG emissions. However, it is unlikely that these measures would be in full effect during the early years of construction. The latter years of construction would potentially realize a reduction in GHG emissions from these measures. Since the implementation schedule for these measures has not yet been determined, reductions from these measures were not applied and so emissions estimates should be seen as conservative. The estimated construction-related GHG emissions are provided in **Table 4.16-5, 2005 LRDP Estimated Construction GHG Emissions**.

Construction GHG emissions would occur only when construction activities are underway. However, it is common practice to amortize construction-related GHG emissions over the project's lifetime in order to include these emissions as part of a project's amortized lifetime total emissions so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies. The SCAQMD's Draft GHG CEQA Guidance recommends using 30 years as a project lifetime (SCAQMD 2008). Therefore, the construction GHG emissions have been amortized over a 30-year period and included in the amortized operational total discussed in the next section.

Table 4.16-5
2005 LRDP Amendment 2 Estimated Construction GHG Emissions

Year	Proposed Project Emissions (Metric Tons CO_2e/year)
2012	3,467
2013	3,774
2014	3,822
2015	3,467
2016	3,766
2017	3,805
2018	3,463
2019	3,773
2020	3,835
Total GHG Emissions	**33,172**
Amortized GHG Emissions[1]	**1,106**

Source: Impact Sciences, Inc., (2010). Emissions calculations are provided in ***Appendix 4.16****.*
Note: Totals in table may not appear to add exactly due to rounding.
[1] *Amortized GHG emissions are calculated by dividing the total construction GHG emissions over a recommended project lifetime of 30 years.*

Operational Emissions

Existing GHG Emissions (2008)

The UCR CAP presents 2008 GHG emissions associated with campus operations. The emissions are based on data collected by the University for reporting emissions to both the ACUPCC and the California Climate Action Registry for Scope 1 and 2 sources. The Campus does not report Scope 3 emissions in the verified inventories conducted annually since 2006, as these emissions are not requested by the greenhouse gas inventory registry that UC campuses use. However, Scope 3 emissions associated with commuting and water use were calculated and provided in the CAP. Emissions associated with commuting were estimated using the URBEMIS2007 model. URBEMIS2007 only calculates CO_2 emissions

and does not provide estimates of other GHGs associated with combustion (i.e., CH_4 and N_2O). Therefore, in order to account for emissions of these compounds, gasoline emissions factors from the California Climate Action Registry's *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions* were used. Electricity is used in the water treatment and conveyance process, contributing indirect GHG emissions due to water use at the campus. The GHG emission factors for electricity consumption were obtained from public reports provided to the California Climate Action Registry by the City of Riverside Public Utilities for 2007. Emission factors for the combustion of natural gas were taken from the CARB's *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories.* The GHG annual electrical demand factors for water supply, treatment, and distribution were obtained from the CEC (California Energy Commission 2006).

A summary of the UCR 2008 GHG emissions is presented in **Table 4.16-6, UCR 2008 GHG Emissions**. The total 2008 emissions are estimated to be 166,903 $MTCO_2e$. The current 2008 emissions exceed the 1990 level emissions by approximately 89,582 $MTCO_2e$.

Table 4.16-6
UCR 2008 GHG Emissions

Scope	Source	GHG Emissions (Metric Tons CO_2e/year)
Scope 1	Natural Gas Consumption	21,810
	Mobile Combustion (Fleet Vehicles)	1,118
Scope 2	Purchased Electricity	75,511
Scope 3	Mobile Combustion (Commuters)	65,228
	Water	3,235
	Amortized Construction	Not Included
Total GHG Emissions		**166,903**

Source: UCR Climate Action Plan *(2010).*
Note: Totals in table may not appear to add exactly due to rounding.

2005 LRDP Scope 1 Emissions

At full development under the 2005 LRDP as amended by the proposed Amendment 2, the campus would generate direct (Scope 1) operational emissions of GHGs. These emissions—primarily CO_2, CH_4, and N_2O—would be the result primarily of fuel combustion in building heating systems and campus-owned motor vehicles. The campus' GHG Scope 1 emissions were calculated based on the total level of development allowed under the amended 2005 LRDP plus the amount of development already

completed as of 2008. The estimates for buildout in 2020 therefore represent all sources on campus, both existing and projected.

Emissions from building operations in 2020 were assumed to occur at the same rates as they were for 2008, with corrections made for Title 24 requirements taking effect before buildout. GHG emissions from building operations in 2008 were divided by the total building space in 2008 to obtain an emissions rate in MTCO2e per square foot. These emissions were also divided by total campus population in 2008 to obtain an emissions rate in MTCO2e per person. These rates were then used to project emissions in 2020 given projected building space and projected additional population, with slightly different results obtained from the two projections. The results for 2020 emissions based on per person and per square foot of building space were averaged for an estimated emissions total for building operations in 2020.

Campus-owned mobile combustion sources would result in emissions of CO_2, CH_4, and N_2O. These emissions are the result of fossil fuel combustion. The CAP estimated these GHG emissions based on fuel consumption logs and vehicle mileage logs. It is not possible to accurately predict future fuel consumption or miles traveled for fleet vehicles under the amended 2005 LRDP. Therefore, this analysis assumed that fleet vehicle GHG emissions in 2020 would increase in direct proportion to the increase in developed building space and campus population. This increase was calculated using the same method as for building emissions. To provide a conservative estimate, no corrections were made for mandated improvements in vehicle fuel efficiency or efforts by UCR to reduce vehicle miles travelled.

2005 LRDP Scope 2 Emissions

The proposed project would also result in indirect GHG emissions from electricity consumption. UCR currently purchases all of its electricity from the local utility, though investigations are underway to determine the potential for generating power on campus through solar or other green power sources. To estimate emissions from electricity generation in 2020, it was assumed that all of the needed electricity would continue to be provided by the local utility and that the emissions would increase in direct proportion to building space and campus population. The emissions were calculated using the same methodology as described above for Scope 1 emissions. No adjustments were made for changes in energy generation by the utility, though the electricity consumption estimate was adjusted to account for reduced energy use by all new building in accordance with Title 24 efficiency requirements.

2005 LRDP Scope 3 Emissions

Scope 3 emissions were calculated for water use at UCR using the same methodology as for Scope 1 and 2 emissions. Emissions from commuting were estimated based on the increase in campus population. In addition to commuting and water use emissions, construction GHG emissions would be considered part of Scope 3 emissions. As previously discussed, the construction emissions were estimated using the

URBEMIS2007 model. The amortized construction emissions presented in **Table 4.16-5** are included as part of this category and are considered as part of the project's overall operational GHG emissions as recommended by the SMAQMD's CEQA Guide.

AB 32 is anticipated to secure emission reductions through a variety of mechanisms, such as increasing energy efficiency standards and the procurement of renewable energy. CARB has already begun to adopt strategies to reduce GHG emissions under AB 32. Full development under the amended 2005 LRDP is anticipated to occur in 2020, when GHG reductions associated with regulations adopted under AB 32 would be in effect. Sources associated with development under the amended 2005 LRDP would certainly be impacted by many of these measures. However there is currently insufficient data to accurately estimate the effect these measures would have on emissions at UCR. Consequently, no adjustments were made to the projected UCR emissions for 2020 for reductions that would result from future regulations adopted under AB 32, resulting in a conservative estimate.

Summary of Operational Emissions

A summary of the operational emissions at full buildout of the campus under the amended 2005 LRDP is provided below in **Table 4.16-7, UCR 2005 LRDP GHG Emissions in 2020**. Detailed emission calculations are provided in **Appendix 4.16**. The emissions represent buildout under "business as usual" conditions – that is GHG emissions that would occur as a result of development under the amended 2005 LRDP (including the development of the School of Medicine) without the reductions from policies, strategies, and mitigation measures from AB 32 and the UCR CAP.

Table 4.16-7
UCR 2005 LRDP GHG Emissions in 2020

Scope	Source	GHG Emissions (Metric Tons CO_2e/year)
Scope 1	Natural Gas Consumption	42,341
	Mobile Combustion (Fleet Vehicles)	3,119
Scope 2	Purchased Electricity	150,121
Scope 3	Mobile Combustion (Commuters)	89,967
	Water	6,596
	Amortized Construction	1,106
Total GHG Emissions		**293,250**

*Source: Impact Sciences, Inc. (2010). Emission calculations are provided in **Appendix 4.16**.*
Note: Totals in table may not appear to add exactly due to rounding.

The net change in GHG emissions between the existing 2008 conditions and full buildout under the amended 2005 LRDP (business as usual conditions) is presented in **Table 4.16-8, UCR Summary of GHG Emissions**.

Table 4.16-8
UCR Summary of GHG Emissions

Year	GHG Emissions[1] (Metric Tons CO_2e/year)
Existing Conditions (2008)	166,903
Buildout of 2005 LRDP (including Proposed Project)*	293,250
Net Change from Existing Conditions*	126,347
Emissions per Service Person	7.2[2]
Significance Threshold per Service Person	6.6

*Source: Impact Sciences, Inc. (2010). Emission calculations are provided in **Appendix 4.16**.*
** Projected GHG emissions under "business as usual" conditions.*
2. Estimated by dividing the total incremental emissions by the total projected increase in campus population between 2008 and 2020/21.

The SCAQMD has developed draft significance thresholds for GHG sources within its jurisdiction similar to those adopted by the BAAQMD. Plan-level emissions that exceed 6.6 $MTCO_2e$ per year per service population (SP) would be considered significant under these draft thresholds. As shown in **Table 4.16-8**, the additional emissions from the campus as a result of full implementation of the development envelope envisioned in the amended 2005 LRDP when divided by the increase in campus population would yield a rate of 7.2 $MTCO_2e$ per SP, which would exceed the 6.6 $MTCO_2e$ per SP draft threshold. Therefore, the project's impact would be considered significant.

In order to meet the 6.6 $MTCO_2e$ per SP draft threshold, the net new emissions associated with the amended 2005 LRDP would need to be reduced from 126,347 $MTCO_2e$ to approximately 115,922 $MTCO_2e$. This represents a reduction of just over 8 percent.

UCR has adopted a number of GHG emissions reduction measures intended to reduce GHG emissions as part of University policy and practice, including measures mandated by the UC Policy on Sustainable Practices. Measures currently in place at UCR are provided in **Table 4.16-9**. These measures would also apply to any new development at the campus. In addition, UCR has committed to additional GHG emission reduction measures as part of its CAP. The measures identified in the CAP for future implementation are provided in **Table 4.16-10**. UCR has committed to these emission reduction measures, and they would be utilized as appropriate during the design, building and operating phase of all future development under the amended 2005 LRDP. It is anticipated that each building project proposed at the campus under the 2005 LRDP as amended by the proposed Amendment 2, would be evaluated for its consistency with the emission reduction measures in the CAP, and emission reduction measures would be incorporated into those projects that are found not to be consistent with the CAP.

There is currently no data on the specific reductions attributable to each of these measures, and many of the measures have potentially variable reduction effectiveness depending on specific situations. However, UCR is required per UC system policy to meet AB 32 and ACUPCC emissions reductions goals. Specifically, by the date of full buildout in 2020, UCR is required to meet an emissions rate equal to its rate in 1990. This requirement would result in a reduction of over 70 percent from current 'business as usual' projections of emissions in 2020. Sufficient reduction measures from the UC Policy on Sustainable Practices and the UCR CAP would be implemented in order to meet this goal. UCR has also noted in its CAP that should these measures be insufficient to reduce GHG emissions to target levels that further measures, whether policy measures or the purchase of offsets, would be applied. Offsets are GHG emissions credits that are created through emissions reductions or carbon sequestration accomplished by a third party. They are available for purchase through various carbon markets and registries. Offsets must represent real and verified reductions or sequestration produced by a project that is monitored and approved by the registry issuing the offsets. They can be applied to UCR's emissions inventory as a way to reduce total emissions and meet reduction targets, including carbon neutrality.

Given UCR's existing commitments to reduce GHG emissions by over 70 percent from BAU projections by 2020, it can be assumed that the emissions rate associated with new development under the amended 2005 LRDP will be reduced by more than 8 percent from BAU. This would reduce emissions below the 6.6 $MTCO_2e$ per SP significance threshold, and the impact would be less than significant. However, to ensure that the Campus diligently includes appropriate GHG reduction measures in future projects developed on the campus under the amended 2005 LRDP, the following mitigation measure will also be implemented.

Mitigation Measure

MM 4.16-1: All projects developed under the amended 2005 LRDP shall be evaluated for consistency with the GHG reduction policies of the UCR CAP and the UC Policy on Sustainable Practices, as may be updated from time to time by the University. GHG reduction measures, including, but not limited to, those found within the UCR CAP and UC Policy identified in **Tables 4.16-9** and **4.16-10** shall be incorporated in all campus projects so that at a minimum an 8 percent reduction in emissions from BAU is achieved. It is expected that the GHG reduction measures in the UCR CAP will be refined from time to time, especially in light of the evolving regulations and as more information becomes available regarding the effectiveness of specific GHG reduction measures. As part of the implementation of the UCR CAP, the Campus will also monitor its progress in reducing GHG emissions to ensure it will attain the established targets.[20]

20 As a member of the ACUPCC, UCR has specific reporting obligations. These obligations in turn create monitoring and tracking needs in order to create the reports. The ACUPCC requires GHG emissions inventories to be reported every other year and narrative reports describing progress towards reduction goals on alternating years. This is in addition to UCR's other GHG reporting requirements, which include annual reports to TCR. Consequently, UCR must track emissions, actual reductions accomplished, and progress towards reductions targets. This will require regular communication and coordination with various campus departments to gather data. Meticulous recordkeeping is also required, especially as TCR reports must undergo a rigorous third-party verification process. Additionally, the success of UCR policies and guidelines intended to address sustainability issues must be ensured and evaluated. This includes monitoring a wide variety of efforts, including compliance with campus green building design guidelines by contractors, the design team and facility maintenance personnel, the campus composting program, the generation of power through on-site renewable energy projects, utilization of videoconferencing equipment to reduce business travel, expanding the vanpool and Zipcar programs, etc. These functions are the responsibility of the Office of Sustainability, who will need to gather data from various campus departments and maintain records of data gathered and calculations made. The specifics of the monitoring program will be decided in collaboration with all campus stakeholders under the supervision of the Office of Sustainability.

Table 4.16-9
GHG Reduction Measures in Current Practice

Reduction Strategy	Implementation	Targeted Emission Source
Energy-reducing shading mechanisms for windows, porch, patio and walkway overhangs installed either in new buildings or during retrofits.	Included in Campus Design Guidelines; ODC works with architects to incorporate these strategies.	Energy Consumption
Grid power (as opposed to diesel generators) used for job site power needs where feasible during construction.	This is a current UCR practice.	Energy Consumption
75 or more percent of buildings oriented to face either north or south (within 30 degrees of N/S).	Campus is on a north-south grid. Most buildings respect this orientation or incorporate remedial measures.	Energy Consumption
Light-colored pavement (e.g., increased albedo pavement) included as part of project design guidelines.	Campus Design Guidelines require the use of "UCR Tan" integral color mixture for all concrete surfaces and limits asphalt surfaces to roads only.	Energy Consumption
All projects required to obtain LEED, Labs21 or other green building certification.	UC policy requires all new projects to achieve LEED Silver, and aim higher where possible.	Energy Consumption
Efficient lighting and lighting control systems installed in new construction and retrofit projects. Daylight used as an integral part of lighting systems in buildings.	All new buildings will continue to adopt this strategy. This strategy is integral to UC's commitment to LEED EBOM.	Energy Consumption
Trees and vegetation planted near structures to shade buildings and reduce energy requirements for heating/cooling.	This is a current UCR practice.	Energy Consumption
Parking lot areas provided with 50% tree cover within 10 years of construction, in particular, low emitting, low maintenance, low water requiring trees. Open lots may be provided with photovoltaic sun shades.	While this strategy is identified in the 2007 Campus Design Guidelines and being followed, the timeframe for establishing 50% tree cover is not established.	Energy Consumption
All new construction projects required to surpass California Energy Code Title 24 by 20 percent or better.	UC Policy requires outperforming Title 24 by 20%.	Energy Consumption
On-site trees that may be removed due to development replaced or preserved as a means of providing carbon storage.	This is a current UCR practice.	Energy Consumption

Reduction Strategy	Implementation	Targeted Emission Source
Developing on-site renewable energy capacity. Photovoltaic shades to be installed for HEV and PHEV Zipcar parking areas.	UCR is in the initial stages of developing on-site solar energy capacity.	Energy Consumption
Water-efficient irrigation systems and devices installed, such as soil moisture-based irrigation controls, to create water-efficient landscapes.	Both landscapes and irrigations systems on campus are water-efficient.	Energy Consumption
Heat recovery projects implemented in campus buildings.	This is an ongoing practice where feasible. To date UCR has: Installed an economizer on the central plant's largest boiler, resulting in an efficiency gain of roughly 35 percent. Added heat recovery at the Chemical Sciences building by re-circulating the office exhaust air that was originally once-through air. Installed run-around loop heat recovery at Boyce Hall. Implemented retro-commissioning for the Science Library and Rivera Library.	Energy Consumption
Promote "least polluting" ways to connect people and goods to their destinations. Provide information on all options for individuals and businesses to reduce transportation-related emissions. Provide education and information about public transportation.	The Sustainability Coordinator (with ODC) is tasked to work with TAPS to further increase awareness and develop educational material to help reduce transportation related emissions.	Motor Vehicles
Accommodations for car sharing programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.	Zipcars are available on campus. Transportation and Parking Services also administer and incentivize a carpool program.	Motor Vehicles
Purchasing vehicles and buses that use alternatives fuels or technology, such as electric hybrids and CNG. Where feasible, fleet vehicles are required to be low emission vehicles. Promote the use of these vehicles in the general community.	Campus Fleet Services has acquired alternative fuel (CNG) vehicles, hybrid vehicles and EV/HEV/PHEV vehicles amounting to 26 percent of the current Fleet Services inventory. This strategy will require further educating the campus constituents and a commitment to alternative fuel vehicles, provided they are economically viable.	Motor Vehicles

Reduction Strategy	Implementation	Targeted Emission Source
Incentives and benefits provided for faculty and staff members who pursue alternative transportation methods.	UCR students, faculty and staff can ride RTA buses at no-cost. Registered participants of the Public Transit Program also receive complimentary parking privileges on campus. When classes are in session, operation of two shuttle routes that service nearby student housing and apartment communities reduce vehicle trips to the campus. Discounted vouchers for Metrolink, a regional commuter rail system, are also available to students. An RTA bus route connects the downtown Riverside Metrolink station with campus.	Motor Vehicles
Bicycle lanes and walking paths designed to facilitate traffic to from and at schools, parks and other community destination points.	UCR works collaboratively with the City of Riverside to facilitate bicycle and pedestrian movement and supports necessary improvements on campus.	Motor Vehicles
Increasing the number of secure bicycle corrals.	Secure bike corrals are being placed on campus at strategic locations based on observed need.	Motor Vehicles
Developing a map for bicycle commuters.	Capital & Physical Planning (CPP) and Transportation and Parking Services (TAPS) are collaborating on a comprehensive map that documents both on and off-campus bike lanes.	Motor Vehicles
Increasing the number of vanpools.	The Vanpool Program is extremely successful and has expanded significantly since its inception. Additional routes are continuously being considered.	Motor Vehicles
Pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements included in project designs. Roadways designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips by featuring traffic calming measures.	Campus improvement projects always take these factors into consideration.	Motor Vehicles
Providing conductive/inductive electric vehicle charging stations.	Electric vehicle charging stations are being considered in partnership with the City of Riverside.	Motor Vehicles
Increasing on-campus housing for students and staff.	UCR is committed to providing on-campus housing for 50% of its student population. Additionally, UCR owns and manages faculty/staff housing close to campus.	Motor Vehicles

Reduction Strategy	Implementation	Targeted Emission Source
Implementing land use strategies to encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density development along transit corridors.	UCR owns and manages faculty/staff housing close to campus.	Motor Vehicles
Including mixed-use, infill, and higher density in development projects to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of services and goods.	UCR is committed to providing on-campus housing for 50% of its student population in the long term. It has promoted the University Village project and continues to work with the City of Riverside on mutually beneficial opportunities.	Motor Vehicles
Construction waste managed during projects.	UCR is committed to LEED Silver. Major Renovations (MR) credits require careful consideration of waste management protocols.	Solid Waste
Uniform outdoor cluster recycling provided.	Outdoor cluster recycling is available at high intensity use areas on campus. UCR is committed to expanding the program and has recently established a transfer station to separate recycle items.	Solid Waste
Introduced campus composting program, including food waste receptacles in appropriate areas with signage.	UCR has an ongoing composting program.	Solid Waste
Developing and implementing sustainable operations in Housing, Dining and Residential Services (HDRS) to include waste reduction, recycling, cleaning supplies, water and energy use.	Ongoing initiative that is being expanded when feasible in collaboration with related campus units.	Solid Waste

Table 4.16-10
GHG Reduction Measures for Future Implementation

Reduction Strategy	Implementation	Targeted Emission Source
Develop a campus certification program for departments or groups meeting sustainability or emissions reductions targets.	Provide targets for departments with official recognition of those departments that meet them.	Energy Consumption
Develop energy intensity standards for the campus's major space usage types.	Include strategy in design and construction guidelines and/or initiate for retrofit projects.	Energy Consumption
Draft and adopt "cool roof" guidelines, require in all new construction projects and retrofit of existing roofs.	Include strategy in design and construction guidelines and/or initiate retrofit projects.	Energy Consumption
Incentive or cost-sharing program to encourage departments or administrative groups to replace older appliances and equipment.	Establish a campus-level fund to support departments in replacing appliances. Consider loan program or joint curricular program to fund operations.	Energy Consumption
Install light emitting diodes (LEDs) for traffic, street and other outdoor lighting.	Replace older lighting with modern high-efficiency lighting.	Energy Consumption
Launch fume hood sash management campaign.	Education, signage, and possible installation of sensors to shut off fume hoods when not in use; also deploy a "shut the sash" campaign to shape user behavior and save energy.	Energy Consumption
Reduce business air travel by developing programs and technologies for remote conferencing.	Purchase equipment for videoconferencing; develop policy encouraging or requiring remote conferencing under specific circumstances (travel distance, type of event, etc).	Air Travel
Limit idling time for commercial vehicles, including delivery and construction vehicles.	Post signage in loading/unloading zones and loading docks; enforce via campus police.	Motor Vehicles
All truck loading and unloading docks shall be equipped with one 110/208 volt power outlet for every two dock doors. Diesel trucks shall be prohibited from idling and must be required to connect to the 110/208 volt power to run any auxiliary equipment. Signage shall be provided.	Include strategy in campus operations guidelines.	Motor Vehicles
Implement a pilot program to implement zero waste events.	Include strategy in campus operations guidelines.	Solid Waste

Reduction Strategy	Implementation	Targeted Emission Source
Work with vendors to reduce unnecessary packaging.	Include strategy in campus purchasing guidelines.	Solid Waste
Encourage environmentally responsible purchasing. Require or give preference to products that reduce or eliminate indirect greenhouse gas emissions, e.g., by giving preference to recycled products over those made from virgin materials.	Include strategy in campus purchasing guidelines.	Solid Waste
Favor projects that use materials which are resource efficient, recyclable, with long life cycles and manufactured in an environmentally friendly way.	Include strategy in campus design and construction guidelines.	Energy Consumption
Implement a comprehensive food procurement program that supports local and/or sustainable foods. Procure sustainable foods for 30% of total food purchases.	Include strategy in purchasing guidelines.	Dining
Educate patrons about sustainable food choices.	Develop educational program/campaign.	Dining
Certify one restaurant as a green business by December 2011. Work with third-party food service providers on campus to green their operations.	Certify using s selected system such as Green Seal's Restaurants and Food Services Operations certification program, or the Green Restaurant Association certification program. Incorporate requirements in contracts with third party food service providers.	Dining
Reduce use of food stuffs with a large CO_2 footprint.	Include strategy in purchasing guidelines.	Dining
Trayless Dining.	Implement across campus, develop alternatives for the summer quarter.	Dining

Impact 4.16-2 **Campus development under the proposed 2005 LRDP Amendment 2 would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The impact would be less than significant.**

The project would result in a significant impact related to GHG emissions if the project was in conflict with an applicable plan, policy, or regulation concerning GHG reductions. The University's Policy on Sustainable Practices and the UCR CAP are the relevant plans with which to review compliance.

The 2005 LRDP as amended by the proposed Amendment 2 is a document to guide campus growth and development. The amended 2005 LRDP is not an implementation plan, and adoption of the proposed Amendment 2 to the 2005 LRDP does not constitute a commitment to any specific project, construction schedule, or funding priority. Rather, the 2005 LRDP, as revised by the proposed Amendment 2, describes a potential development program for the campus through the 2020/21 academic year which may or may not be implemented in full within this timeframe as campus growth will depend in large part on enrollment growth and in part on availability of funding. This EIR conservatively analyzes the GHG emissions that would result from the buildout of the new building space projected in the 2005 LRDP as amended by the proposed Amendment 2 and an enrollment level of 25,000 students. As shown by the emissions reported under **Impact 4.16-1** above, if all the building space and population were added to the campus, substantial additional GHG emissions would result that would theoretically set back the Campus's efforts of reducing its total GHG emissions such that the campus's 2020 GHG emissions equal its 1990 emissions.

However, this enrollment level and most of the growth in building space on the campus was accounted for by UCR in developing its CAP, and the CAP has been designed to ensure that even as the campus grows, new development adds incrementally fewer GHG emissions (i.e., new buildings are more "green") and the Campus implements measures to reduce emissions from its existing sources. Furthermore, in compliance with **Mitigation Measure 4.16-1** above, each building project proposed at the campus under the amended 2005 LRDP would be evaluated for its consistency with the emission reduction measures in the CAP as applicable, and emission reduction measures would be incorporated into those projects that are found not to be consistent with the CAP. Therefore, the 2005 LRDP as amended by the proposed Amendment 2 would not conflict with the UCR CAP or the UC Policy on Sustainable Practices. The impact would be less than significant.

Mitigation Measure: No mitigation measure is required.

4.16.4.4 Cumulative Impacts and Mitigation Measures

As the impact from a project's GHG emissions is essentially a cumulative impact, the analysis presented in the section provides an adequate analysis of the proposed project's cumulative impact related to GHG emissions. No further analysis is required.

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5.0 OTHER CEQA CONSIDERATIONS

Section 15126 of the *California Environmental Quality Act (CEQA) Guidelines* state that an Environmental Impact Report (EIR) must include a discussion of the following three topics:

- Significant environmental effects which cannot be avoided if the proposed project is implemented;
- Significant irreversible environmental changes which would be involved in the proposed project should it be implemented; and
- Growth inducing effects of the proposed project.

In addition, Section 15128 of the *State CEQA Guidelines* requires a brief statement of the reasons that various possible effects of a project have been determined not to be significant and, therefore, are not evaluated in the EIR. The following sections address each of these types of impacts.

5.1 SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE 2005 LRDP

Table 2.0-1, Summary of Environmental Impacts and Mitigation Measures, which is contained in **Section 2.0** of this EIR, and **Sections 4.1** through **4.16** of this EIR provide a comprehensive identification of the environmental effects of the proposed 2005 LRDP Amendment 2, including the level of significance both before and after mitigation.

5.2 SIGNIFICANT AND UNAVOIDABLE EFFECTS

An EIR must identify significant impacts associated with implementation of the proposed project that could not be mitigated to a less than significant level. As part of the certification process, The Board of Regents of the University of California (The Regents) will make a final decision as to the significance of impacts and the feasibility of mitigation measures in this EIR. As detailed in **Section 4.0**, implementation of the proposed project would result in the following significant impacts that would not be mitigated to a less than significant level:

5.2.1 Agricultural Resources

- Significant impact resulting from the conversion of approximately 37.3 acres of Important Farmland to nonagricultural uses
- Conversion of approximately 37.3 acres of Prime Farmland into nonagricultural uses would result in a cumulatively considerable contribution to the regional trend of loss of farmland

5.2.2 Air Quality

- Construction phase impacts resulting from emissions of NOx
- Operational impacts resulting from emissions of VOC, NOx, and PM_{10}
- Conflict with or obstruct implementation of the applicable air quality plan

5.2.3 Noise

- Construction phase impacts resulting from groundborne vibration or groundborne noise levels
- Construction phase impacts resulting from an increase in on-campus ambient noise levels
- Construction phase impacts resulting from an increase in off-campus ambient noise levels

5.2.4 Traffic and Circulation

- Operational impacts resulting from an exceedance of the applicable criteria at 17 intersections during the AM and/or PM peak hour under 2020 conditions
- Operational impacts resulting from an exceedance of the applicable criteria at 17 intersections during the AM and/or PM peak hour under existing conditions
- Construction phase impacts resulting from construction vehicle trips
- Operational impacts resulting from exceedance of established service levels on roadways designated by the Riverside County Congestion Management Program under 2020 conditions
- Operational impacts resulting from exceedance of established service levels on roadways designated by the Riverside County Congestion Management Program under existing conditions

All other environmental impacts (project-specific and cumulative) are either less than significant or can be mitigated to a less than significant level.

5.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 15126.2(c) of the *State CEQA Guidelines* states that an EIR must include a discussion of any significant irreversible environmental changes that would be caused by a proposed project. Generally, a project would result in significant irreversible environmental changes if:

- the primary and secondary impacts would generally commit future generations to similar uses;
- the proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy);
- the project would involve a large commitment of nonrenewable resources; or

- the project involves uses in which irreversible damage could result from any potential environmental accidents associated with the project.

Development under the 2005 LRDP as amended by the proposed Amendment 2 would result in the continued commitment of the UCR Campus to University-related uses, thereby precluding any other uses for the lifespan of the campus. The Regent's ownership of the campus represents a long-term commitment of the campus to University use. Restoration of the campus to pre-developed conditions would not be feasible given the degree of disturbance, the urbanization of the area, and the level of capital investment. In addition, with respect to this project, the proposed amendment to the 2005 LRDP increases the development allocation identified in the 2005 LRDP to accommodate the SOM. While the proposed 2005 LRDP Amendment 2 could be said to continue the commitment of the UCR campus site for University purposes for future generations, the proposed amendment to the 2005 LRDP also increases the commitment due to increased development that would occur on campus.

Resources that would be permanently and continually consumed by project implementation include water, electricity, natural gas, and fossil fuels. In addition, construction activities related to the proposed 2005 LRDP Amendment 2 would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil, natural gas, and gasoline) for automobiles and construction equipment. However, the consumption of these resources during construction and operation of campus facilities would not represent unnecessary, inefficient, or wasteful use of resources.

With respect to operational activities on campus, compliance with all applicable building codes, as well as LRDP Planning Strategies, Programs and Practices, and Mitigation Measures would ensure that all natural resources are conserved to the maximum extent feasible. It is also possible that new technologies or systems will emerge, or will become more cost-effective or user-friendly, to further reduce the campus' reliance upon nonrenewable natural resources. Overall, the consumption of natural resources would increase at a lesser rate than the projected population increase due to the variety of energy conservation measures that the Campus has and will continue to implement.

As previously discussed, the Campus has instituted lighting and other energy conservation measures and has been replacing in-building lighting systems with up-to-date energy-saving equipment when appropriate. Lighting conservation efforts in new construction include installation of occupancy sensors to automatically turn off lights when not in use, lighting reflectors, electronic ballasts, and energy efficient lamps. In addition, the Campus shall continue to implement all new development under the proposed amendment to the 2005 LRDP in accordance with specifications contained in Title 24 of the California Building Code.

Through the efficient use of electricity on campus, the use of natural gas on the campus would also occur in an efficient manner. Improvements to the efficiency of HVAC units will also allow more efficient use of natural gas for heating.

The *State CEQA Guidelines* also require a discussion of the potential for irreversible environmental damage caused by an accident associated with the project. While the UCR campus uses, transports, stores, and disposes of hazardous wastes, as described in **Section 4.7, Hazards and Hazardous Materials**, the Campus complies with all applicable state and federal laws and existing campus programs, practices, and procedures related to hazardous materials, which reduces the likelihood and severity of accidents that could result in irreversible environmental damage. In the history of UC ownership of the campus, there have been no accidents resulting in irreversible environmental damage, indicating that current practices with respect to hazardous materials handling are adequate, and thus the potential for the amended 2005 LRDP to cause irreversible environmental damage from an accident or upset of hazardous materials, is considered low.

5.4 GROWTH-INDUCING IMPACTS

This section evaluates the potential for the proposed 2005 LRDP Amendment 2 to induce growth in the Riverside area. Section 15126.2(d) of the *State CEQA Guidelines* requires that an EIR include a discussion of the potential for a proposed project to foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.

The *State CEQA Guidelines* do not provide specific criteria for evaluating growth inducement and state that it must not be assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment. Growth inducement is generally not quantified, but is instead evaluated as either occurring or not occurring with implementation of a project. The identification of growth-inducing impacts is generally informational, and mitigation of growth inducement is not required under CEQA. It must be emphasized that the *State CEQA Guidelines* require an EIR to "discuss the ways" that a project could be growth inducing and to, "discuss the characteristics of some projects that may encourage […] activities that could significantly affect the environment." However, the *State CEQA Guidelines* do not require an EIR to predict or speculate specifically where such growth would occur, in what form it would occur, or when it would occur.

The proposed 2005 LRDP Amendment 2 represents a continuation of the use of the UCR campus for University purposes, and includes planning limitations on overall building square footage and enrollment. The project increases the potential development that could occur on the UCR campus to a total of 14.9 million gsf of development. As discussed in **Section 4.11, Population and Housing** and

summarized below, the proposed amendment to the 2005 LRDP is intended to accommodate enrollment through the year 2020, and would result in additional population and employment in the area, which could induce growth.

UCR was originally established in 1948, when The Regents acted to establish a College of Letters and Sciences at the Riverside location, home already to the UC Citrus Experiment Station, to serve as a small liberal arts college. It grew steadily and increasing demand and enrollment caused The Regents to expand the Riverside campus designation to that of a general campus in 1959. This general campus status allowed the expansion of both undergraduate and graduate programs throughout the 1960s, as well as creation of the space necessary to accommodate the growing population of students, resulting in an increase from 1,500 students in 1960 to over 5,000 by 1970. The 2010/11 enrollment was 20,746 students three-quarter average headcount.

The UCR campus is a substantial economic force in the regional economy. In the 2010/11 academic year, the Campus employed 5,384 persons, and UCR is listed as one of the major employers in Riverside County. Income is generated by the expenditure of students, faculty, staff, and campus visitors on retails goods and services in the City of Riverside and adjacent areas in the County of Riverside. In addition, the Campus purchases goods and services from local and regional businesses and thereby generates additional income in the region. Given income and employment multiplier factors (whereby direct spending by UCR and the campus population results in additional spending by the businesses patronized by UCR and students, faculty and staff), campus-related spending generates a significant number of indirect and induced jobs in the regional economy.

Growth inducement is evaluated with respect to changes in the City and County of Riverside. It is expected that the majority of persons affiliated with UCR would live within the County of Riverside, as demonstrated in **Section 4.11, Population and Housing**, and therefore most of the growth impacts would occur within this area. While implementation of the proposed 2005 LRDP Amendment 2 would induce substantial population growth within the City of Riverside, this growth is anticipated to occur by the local and regional planning agencies, and would not result in population or housing effects that would lead to a significant impact on the environment. Thus, the population growth itself would not be considered a significant impact. The remainder of the direct growth would occur in the adjacent three-County area of San Bernardino, Orange, and Los Angeles Counties, and would be distributed to numerous communities, and therefore is not expected to substantially affect those communities.

For the purposes of this analysis, the 2005 LRDP Amendment 2 would be considered growth-inducing if it meets either of the following criteria:

- Implementation of the 2005 LRDP Amendment 2 causes economic expansion and population growth through employment expansion and/or the construction of new housing, or
- Implementation of the 2005 LRDP Amendment 2 removes an obstacle to population growth (for example, through the expansion of public services or utilities into an area that does not presently receive these services), or through the provision of new access to an area, or a change in a restrictive zoning or General Plan land use designation.

An evaluation of the 2005 LRDP Amendment 2 against these criteria is provided below.

5.4.1 Economic Expansion

Direct Growth

With the implementation of the proposed 2005 LRDP Amendment 2, the total campus-affiliated population living on the UCR campus would increase by 2,127 persons. In the City (exclusive of the campus), a population increase of 11,711 persons, including students, faculty, staff and dependents of married UCR employees would result in a total increase in campus-affiliated population of 13,838 persons within the City of Riverside.

The proposed 2005 LRDP Amendment 2 would also provide for an increase of 7,183 employees on the campus over existing levels. Given the high unemployment rate in the County, it is assumed that at least 10 percent of the new employees (718 of the 7,183 new UCR employees) would already be living in the region and therefore would not add population. Therefore, it is assumed that 6,465 LRDP-related faculty, staff, and non-UC employees would be non-local and would relocate into the area to work on the campus. Assuming a household size of 2.3 persons per faculty and staff, based on an average of 3.3 persons per household, approximately 14,870 dependents could also relocate into the region. As discussed in **Section 4.11 Population and Housing**, approximately 50 percent of existing employees currently reside in the City of Riverside, 11 percent of employees reside in the County of Riverside exclusive of the City, and 39 percent reside outside the County, in Orange, San Bernardino, Los Angeles Counties and elsewhere. Assuming population distribution patterns remain the same, the population would result in a housing demand of 3,233 housing units within the City and 711 units within the County.

Indirect Economic Growth

The proposed 2005 LRDP Amendment 2 would result in growth inducement as a result of economic expansion or population growth. The addition of population in an area has the potential to increase the amount of spending, thereby stimulating the economic activity of the area. Increased future employment generated by resident and employee spending can ultimately result in the physical development of space or the need for services to accommodate additional employees to serve the new population. Changes in regional population would result as campus-serving businesses or other businesses move into or expand in response to the increased demand for goods and services. Therefore, apart from the direct jobs on the campus, the operation of the campus under the amended 2005 LRDP would result in the creation of new indirect and induced jobs. (Indirect jobs are those that are created or sustained when the Campus purchases goods and services from businesses in the region, and induced jobs are created or sustained when wage incomes of those employed in direct and indirect jobs are spent on the purchase of goods and services in the region.)

Although campus-specific data are not available with respect to the number of indirect and induced jobs that would be expected to result from a new job on the campus, studies conducted for other UC campuses have found the employment multiplier to range from less than 1 to about 2. In other words, one direct job on the campus could potentially generate or sustain one to two additional indirect or induced jobs in the region. The 7,183 new direct faculty and staff jobs related to the proposed 2005 LRDP Amendment 2 could generate or sustain about 7,200 to 14,400 additional jobs in the regional economy.

Indirect jobs would be created primarily in Riverside County, but they also could occur in Orange, San Bernardino, or Los Angeles County to the extent that the Campus purchases goods and services from communities within this area. Induced jobs would be created or sustained in those communities where campus-related income is spent. It should be noted that the extent to which a region or a specific community captures these indirect and induced effects of primary or direct jobs depends on the opportunities available to the direct job holders to spend money in the regional or local economy. If such opportunities are not available or are limited, the income "leaks" out of the local economy into other areas.

In light of the above, it would be expected that most of the indirect and induced jobs in the food, entertainment, and service sectors would be created in the City of Riverside where the majority of the off-campus population currently resides and where most of the local purchasing by students, faculty, and staff occurs. This is expected to continue to occur under the planning horizon of the amended 2005 LRDP. It would be expected that the campus-related indirect and induced employment growth would result in more commercial infill development on lands that are vacant or underutilized, especially in those parts of

the City that are near the campus. As specific development projects are proposed, they will be subject to environmental review. Some of the induced jobs would be created in other regional communities where wage incomes of the new population associated with the proposed amendment to the 2005 LRDP who live in those communities would be spent. Communities surrounding the campus would also continue to benefit from the leakage of some of the campus-related income. The direct, indirect, and induced jobs described above represent the bulk of the changes in employment that would result from the implementation of the proposed 2005 LRDP Amendment 2. However, additional growth is also probable. This growth is related to the "magnet effect" of campuses whereby campus-serving businesses locate in close proximity to the campus, and the "incubator effect" of university campuses whereby businesses are established near a campus by persons associated with the campus. Both types of effects vary widely by campus, and the magnitude of growth, especially due to the incubator effect, cannot be predicted with much precision, and an attempt to quantify these effects would be speculative.

Indirect Population Growth

The indirect and induced employment that would result from the implementation of the amended 2005 LRDP could in turn result in additional population growth as individuals move into the study area to fill these jobs. A small portion of the indirect and induced jobs can be assumed to be filled by new members of the regional population. However, a large influx of non-local population into the study area in response to the indirect and induced jobs is not expected for a number of reasons. Many of the indirect and induced jobs would be in retail or service sectors and would not require special skills. Therefore it would be reasonable to assume that these jobs would be filled by persons already in the study area who are unemployed, or by students at UCR, or by dependents and spouses of the persons who move into the study area in response to the new jobs on the campus. The indirect population growth that could be generated in association with the proposed amendment to the 2005 LRDP would be too small to have a substantial effect.

5.4.2 Removal of Impediment to Growth or Urbanization in a Remote Location

Growth in an area may result from the removal of physical impediments or restrictions to growth, as well as the removal of planning impediments resulting from land use plans and policies. In this context, physical growth impediments may include non-existent or inadequate access to an area or the lack of essential public services (e.g., water services), and planning impediments may include restrictive zoning and/or general plan designations.

As discussed in **Section 4.15 Utilities**, utility systems would be expanded and extended to new areas on campus as a result of the amended 2005 LRDP. Expansions would occur in particular onto the Campus Reserve site, where limited infrastructure currently exists. All on-campus expansions and extensions would occur in conjunction with the growth in building space that would be developed to serve new research programs and initiatives on the campus, such as the SOM. Because campus utilities do not serve off-campus areas, utility extensions and expansions would not result in the removal of existing impediments to growth off campus or lead to urban growth outside the boundary of the campus. The environmental effects of the growth within the confines of the campus due to the proposed amendment to the 2005 LRDP are analyzed in the other sections of this EIR.

5.4.3 Precedent Setting Action

A decision by The Regents of the University of California to approve the proposed 2005 LRDP Amendment 2 would not be considered a precedent-setting action. Approval of specific projects under the amended 2005 LRDP would be considered on a case-by-case basis and would not necessarily mean that other development approvals in the area would follow. As noted above, the UCR campus is located in an already developed area. However, the scale of physical development included in the proposed 2005 LRDP Amendment would exceed the development cap approved in the 2005 LRDP. Due to the ability for the campus to grow in terms of its physical development more than what was approved under the 2005 LRDP, the proposed amendment to the 2005 LRDP is considered growth inducing.

5.5 MITIGATION MEASURES PROPOSED TO MINIMIZE SIGNIFICANT EFFECTS OF THE 2005 LRDP

Table 2-1, Summary of Environmental Impacts and Mitigation Measures, which is contained in **Chapter 2** of this EIR, provides a comprehensive identification of the environmental effects of the proposed 2005 LRDP Amendment 2, along with proposed mitigation measures.

5.6 EFFECTS FOUND NOT TO BE SIGNIFICANT

Section 15128 of the *State CEQA Guidelines* requires an EIR to briefly describe any potential environmental effects that were determined not to be significant during the Initial Study and EIR scoping process and were, therefore, not discussed in detail in the EIR. All impacts found less than significant are described in the Initial Study or in the sections of the EIR.

5.7 ALTERNATIVES TO THE 2005 LRDP AMENDMENT 2

Alternatives to the 2005 LRDP are presented in **Section 6.0, Alternatives** of this EIR.

6.0 ALTERNATIVES

6.1 INTRODUCTION

California Environmental Quality Act (CEQA) requires an Environmental Impact Report (EIR) to describe and evaluate a range of alternatives to the proposed project, or alternatives to the location of the proposed project. The purpose of the alternatives analysis is to explore ways that the objectives of the proposed project could be attained while reducing or avoiding significant environmental impacts of the project as proposed. This process is intended to foster informed decision making in the environmental process. This section presents the alternatives to the proposed project evaluated for their ability to reduce or avoid the proposed project's significant impacts.

None of the public or agency comments received in response to the Notice of Preparation issued for this EIR were related to alternatives.

6.2 PROJECT OBJECTIVES

The 2005 LRDP EIR listed a number of academic, physical, and operational objectives for UCR. All of those objectives would still apply to campus development under the 2005 LRDP amended by the proposed Amendment 2. In addition to those, the specific objectives of the proposed 2005 LRDP Amendment 2 are to:

- Serve the health care and medical education needs of the Inland Empire residents surrounding the Riverside campus and improve the health of the medically underserved throughout the inland Southern California region by facilitating the development of a school of medicine;
- Provide a site for a new school of medicine at a location that would allow the school of medicine to draw upon the intellectual, technological, and material resources of the UCR's existing and future related programs and facilities, and facilitate academic and research synergies;
- Minimize travel distance between the East Campus academic core and the West Campus school of medicine by providing for enhanced pedestrian, bicycle and campus shuttle pathways/routes; and also be easily accessible to the Riverside community and the Inland Empire;
- Provide improved locations for future parking structures that re-distribute parking around the West Campus academic core to provide reasonable access from parking to all areas within the academic core and provide noise buffers between the West Campus academic core and the I-215/SR-60 freeway;
- Facilitate a pedestrian link over the freeway between East and West Campuses through the construction of a pedestrian bridge that connects two future parking structures with ADA compliance provided by the elevators within the parking structures;

- Facilitate the development of better designed Open Space on the West Campus that would allow for more buildings to have frontage on the proposed Open Space as well as serve as a transportation corridor from the southern boundary of the West Campus to the northern boundary; and

- Better utilize the available land base on the West Campus by increasing the FAR in the SOM precinct to 1.9 and the West Campus academic core to 1.6 to retain a compact academic core in relationship to each other and also with the East Campus academic core. The East Campus academic core would retain the 1.0 FAR in the 2005 LRDP.

6.3 RANGE OF ALTERNATIVES CONSIDERED

The range of alternatives studied in the EIR must be broad enough to permit a reasoned choice by decision-makers when considering the merits of the project. The analysis should focus on alternatives that are feasible, i.e., that may be accomplished in a successful manner within a reasonable period of time; and that take economic, environmental, social, and technological factors into account. Alternatives that are remote or speculative need not be discussed.

Furthermore, the alternatives analyzed for a project should focus on reducing or avoiding significant environmental impacts associated with the project as proposed. Implementation of the proposed 2005 LRDP Amendment 2 would result in potentially significant environmental impacts to conversion of farmland to non-agricultural uses, air emissions from construction and operational activities, construction noise, degradation of traffic level of service from additional campus-related vehicle trips. Most potentially significant impacts can be reduced to less than significant levels through incorporation of mitigation measures.

Given that the potentially significant impacts and significant and unavoidable impacts of the proposed project stem mainly from the inclusion of the school of medicine in the 2005 LRDP and are not related to other changes such as the redesign of the West Campus open space or the relocation of the West Campus parking structures, the alternatives evaluation focuses on alternatives to the school of medicine as proposed, including potential alternate locations for the medical school.

The analysis below presents the alternatives that were considered but not carried forth for detailed evaluation and alternatives that were evaluated in detail. As required by *State CEQA Guidelines*, a No Project Alternative is also analyzed. Each alternative that was evaluated in detail was examined for feasibility of implementation, ability to meet project objectives, and ability to reduce environmental impacts of the proposed project.

6.4 ALTERNATIVES NOT CONSIDERED IN THIS EIR

This section discusses alternatives that were considered, but were not carried forth for detailed evaluation because they did not meet project objectives or were found to be infeasible for technical, environmental, or social reasons.

6.4.1 Alternative SOM Site - Canyon Crest Family Student Housing Site

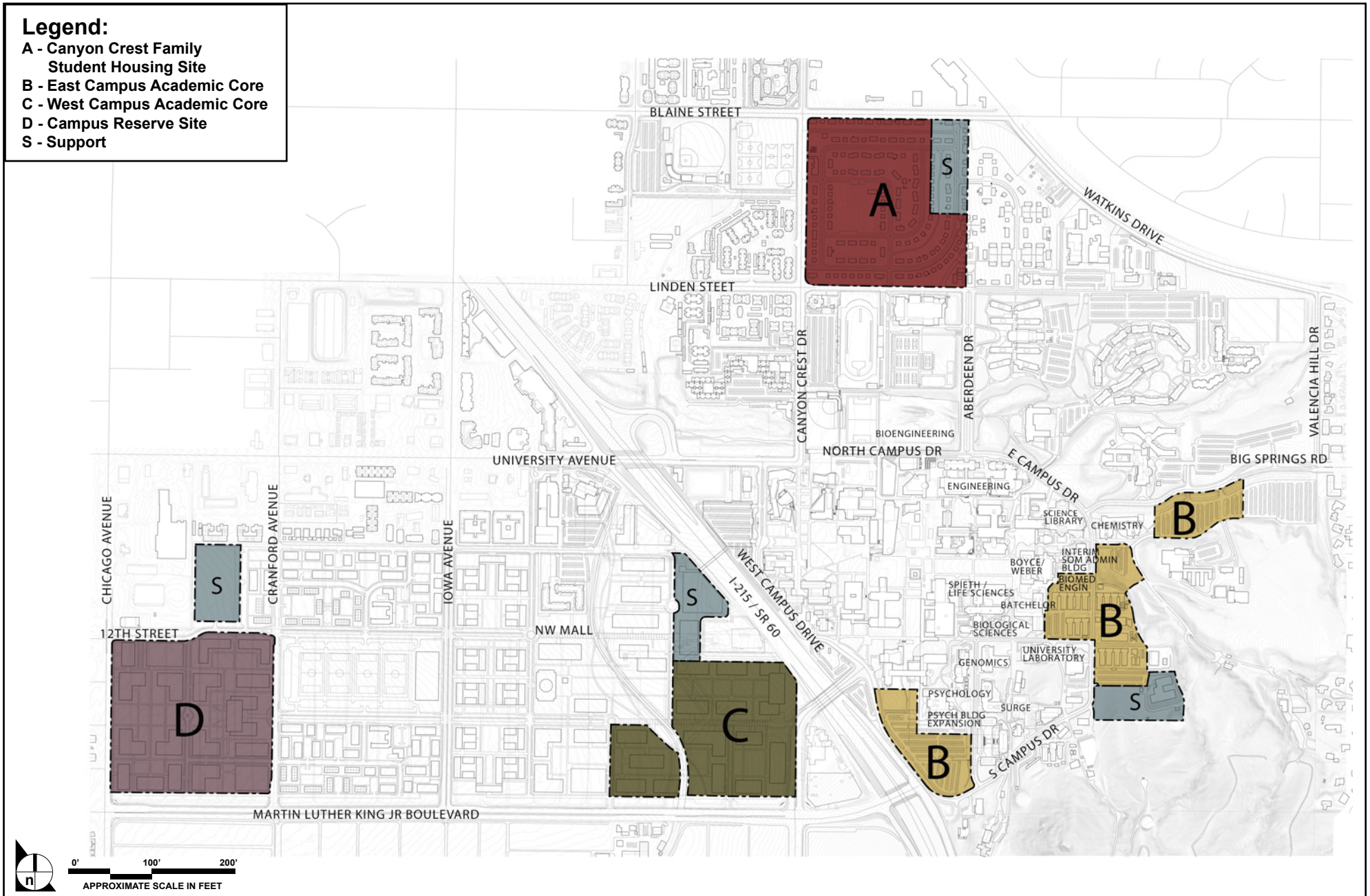
Under this alternative, the SOM would be developed at the existing site of the Canyon Crest family student housing located north of Linden Street, south of Blaine Street, east of Canyon Crest Drive, and west of the Corporation Yard on the East Campus. The Canyon Crest family student housing facilities would be relocated to the West Campus as identified in the 2005 LRDP. **Figure 6.0-1, Alternative Site Locations,** presents the location of this alternative site. This alternative is not evaluated in detail because it would displace future planned undergraduate residential programs including residence halls and apartments, athletic/recreational facilities, and commuter parking facilities that were identified through the 2005 LRDP Land Use Map as: *Residence Hall and Related Support*; *Family, Apartment Housing and Related Support (Including Child Care)*; *Athletics and Recreation*; and *Parking*. Another location for these uses would need to be found. A site for these uses would not be available on the East Campus. To the extent that these uses are relocated to the West Campus, it would conflict with the basic planning principle underlying the 2005 LRDP of serving undergraduates on the East Campus and utilizing the West Campus predominantly for graduate and professional schools. It would vastly increase the FAR for housing, which would compromise the housing model. Commuter parking would be relocated to the West Campus, which would increase walking time to academic and support facilities on the East Campus. It would relocate athletics and recreation fields on the West Campus. The result would be a concentration of the fields on the West Campus, which would compromise the availability of them on the East Campus near the residence halls and undergraduate apartments. This alternative would also not reduce any environmental impacts as compared to the proposed project because with the relocation of the student housing and other planned uses to the West Campus and associated displacement effects, this alternative would require the use of the Campus Reserve site, and therefore result in the same impact as the proposed project on Important Farmland. Finally, locating the SOM at the Canyon Crest site would likely have greater traffic impacts on streets leading to this site because the site is more distant from the freeway compared to the proposed *SOM* site on the West Campus. This alternative, therefore, would also not meet the project objective of better utilizing the land base of the West Campus. For all of these reasons, this alternative was considered infeasible and was not evaluated in detail in this EIR.

6.4.2 Alternative SOM Site – East Campus Academic Core

Under this alternative, the SOM would be developed within the academic core of the East Campus along East Campus Drive, east of Batchelor Hall and south of the Chemistry Building in an area within which the existing science and engineering facilities/programs are located. **Figure 6.0-1** presents the location of this alternative site. This alternative is not evaluated in detail because it would displace the campus greenhouses and other undergraduate academic facilities and uses to the West Campus, which would conflict with the basic planning principle underlying the 2005 LRDP of serving undergraduates on the East Campus and utilizing the West Campus predominantly for graduate and professional schools. This alternative would also not reduce any environmental impacts such as traffic as compared to the proposed project, and it would add external traffic associated with the clinical buildings and medical office buildings to the internal campus circulation system. Adding an external component to the traffic mix would result in heavier traffic and congestion on interior campus roadways. The east edge of the East Campus academic core is located on sloping terrain, which makes walking difficult and vehicle access limited, which could affect universal access to the ambulatory clinic and medical office programs. Existing programs would need to move to another location on campus; older buildings would need to be demolished and replaced by newer facilities, which could accommodate higher intensity uses; and density or FAR on the East Campus would have to increase. The existing and future planned uses on the East Campus displaced by the SOM would need to be located on the West Campus. This would impact potential expansion of undergraduate programs and facilities on the East Campus academic core with the resulting move to the West Campus to accommodate their footprint. Due to the domino effect of these displaced uses displacing other planned uses on the West Campus, development of the Campus Reserve site would not be avoided. Thus the proposed project's significant impact on Important Farmland would also not be avoided. This alternative would also not meet the project objective of better utilizing the land base of the West Campus. For all of these reasons, this alternative was considered infeasible and was not evaluated in detail in this EIR.

6.4.3 Alternative SOM Site – West Campus Academic Core

Under this alternative, the SOM would be developed within the Academic Core of the West Campus north of Martin Luther King Jr. Boulevard, east of Gage Canal, near the I-215/SR-60 freeway. **Figure 6.0-1, Alternative Site Locations** presents the location of this alternative site. This alternative is not evaluated in detail because it would displace graduate and professional academic programs west of Gage Canal, which in turn would displace campus housing that would be relocated to the Campus Reserve site. Displaced academic uses, including some undergraduate programs, would be moved further away from the academic core on the East Campus, which would compromise the campus policy of maintaining a compact academic core and would hinder the ability of faculty, staff, and employees to travel back



SOURCE: UCR School of Medicine Site Studies - 2010

FIGURE **6.0-1**

Alternative Site Locations

and forth between the undergraduate programs on the East Campus and the graduate and professional programs (including some undergraduate) on the West Campus. This alternative also would not reduce any environmental impacts as compared to the proposed project as it would require the conversion of Important Farmland on the Campus Reserve site and result in similar traffic impacts as the proposed project. For all of these reasons, this alternative was considered infeasible and was not evaluated in detail in this EIR.

6.4.4 Alternative SOM Site – Campus Reserve Site

Under this alternative, the SOM would be developed on the approximately 37.3 acre Campus Reserve site located at the northeast corner of Martin Luther King Jr. Boulevard and Chicago Avenue on the West Campus. **Figure 6.0-1** presents the location of this alternative site. This site was originally considered by the Campus for the SOM. However based on discussions with the new Dean of the School of Medicine and executive campus leadership, it was determined that the SOM should be closer to the East Campus academic core as well as adjacent to the West Campus academic core. Therefore the Campus Reserve site was rejected from further consideration by the Campus. This alternative is not evaluated in detail also because it would not reduce any environmental impacts as compared to the proposed project as it would result in essentially the same traffic impacts and the same impact related to the conversion of Important Farmland. This alternative would also not meet the project objective of locating the SOM such that travel between East and West Campuses is minimized as this site would be more distant from the East Campus and separated by housing from the West Campus academic core. For all of these reasons, this alternative was considered infeasible and was not evaluated in detail in this EIR.

6.4.5 Increased Density Alternative

An alternative was considered that developed the SOM at the proposed site but increased the density of West Campus housing development such that the need to use the Campus Reserve site for housing was eliminated. This alternative was determined to be infeasible. With the addition of SOM to the West Campus, the development densities would be increased from a previously targeted FAR of 1.0 to an FAR of 1.9. If the Campus Reserve site were not used to accommodate the housing displaced by the SOM, the West Campus housing would need to be developed in apartments that are greater than three stories. Increasing the density (FAR) would compromise the campus housing model and increase the cost of providing student housing on the campus. For this reason, an increased density alternative was not evaluated in detail in this EIR.

6.5 ALTERNATIVES EVALUATED IN DETAIL

This section presents an evaluation of two alternatives to the proposed 2005 LRDP Amendment 2: No Project Alternative and Reduced SOM Alternative. For each alternative, a brief description is first presented, followed by a summary impact analysis relative to the proposed project, and an assessment of the degree to which the alternative would meet project objectives.

6.5.1 Alternative 1: No Project

Description

Under the No Project Alternative, none of the land use map and text changes contained in the proposed amendment to the 2005 LRDP, including the designation of the *SOM* site for that use and the associated increase of 3.1 million gsf of building space nor the designation of the Campus Reserve site for *Housing* and *Open Space* uses, would be made to the 2005 LRDP. The horizon year of the 2005 LRDP would remain at 2015/16.

Growth at UCR would continue to be guided by the 2005 LRDP. As a result, the student population would increase from 19,439 students in 2009/10 to 25,000 students by 2015/16, with the total campus daytime population of 35,540 persons compared to 41,393 persons in 2020/21 under the proposed project. The No Project Alternative population is 15 percent less than the population under the proposed project. Development on campus would increase from 6.5 million gross square feet (gsf) in 2009/2010 to 11.8 million gsf in 2015/16, compared to an increase to 14.9 million gsf under the proposed 2005 LRDP Amendment 2. Therefore the new building space added under this alternative would be about 37 percent less than that added under the proposed project. The West Campus would develop per the 2005 LRDP Land Use Map with no development at the Campus Reserve site, the additional 3.1 million square feet of building space associated with the medical school would not be built, and the West Campus major open space would be developed per the Grove concept.

Impact Analysis

Aesthetics

Aesthetic impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR and would remain unchanged under this alternative. The 2005 LRDP EIR determined that impacts related to effects on scenic vistas, visual character of the campus, and new sources of light and glare would be less than significant with implementation of 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures.

Although the magnitude of development under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be developed, and the development of the Campus Reserve site would not occur, the aesthetic impacts of the No Project Alternative would be generally comparable to the less than significant aesthetic impacts of the proposed project.

Agricultural Resources

Agricultural resources impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that the impact related to the conversion of Important Farmland to nonagricultural uses would be significant and unavoidable even with implementation of the relevant 2005 LRDP Planning Strategies. However, the 2005 LRDP would not conflict with existing zoning for agricultural use, or a Williamson Act contract, and there would be no impact. Implementation of the 2005 LRDP also would not involve any other changes that would indirectly convert farmland to nonagricultural uses, and the impact would be less than significant.

As the development of the Campus Reserve site would not occur under the 2005 LRDP (i.e., the No Project Alternative), the impact of the No Project Alternative on Important Farmland would be reduced by 37.3 acres compared to the proposed project, although as noted above, it would still be a significant and unavoidable impact. All other impacts on agricultural resources would be comparable to the proposed project and less than significant.

Air Quality

Air quality impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that implementation of the 2005 LRDP would not conflict with implementation of the Air Quality Management Plan for the South Coast Air Basin and the impact would be less than significant. However, 2005 LRDP construction and operational activities could contribute substantially to an existing or projected air quality violation, and even with implementation of the relevant Programs and Practices and Mitigation Measures, these impacts would be significant and unavoidable. Implementation of the 2005 LRDP could also result in a cumulatively considerable net increase of criteria pollutants for which the region is in nonattainment under federal or State ambient air quality standards, which is considered a significant and unavoidable impact. Implementation of the 2005 LRDP would not expose sensitive receptors on or off campus to substantial pollutant concentrations due to campus-generated toxic air emissions or other sources and these impacts would be less than significant. Implementation of the 2005 LRDP also would not create objectionable odors affecting a substantial number of people and this impact would be less than significant.

As the magnitude of development under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project by 3.1 million square feet of building space associated with the medical school that would not be built, and there would be about 5,853 fewer persons traveling to and from the campus, the air quality impacts of the No Project Alternative would be lower compared to the proposed project. However, as noted above, some of the air quality impacts of the No Project Alternative would be significant and unavoidable. The same impacts would also be significant and unavoidable under the proposed project.

Biological Resources

Biological resources impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that impacts to candidate, sensitive, or special status plant and wildlife species would be less than significant with implementation of 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures. Potential impacts to California gnatcatcher or riparian habitat, wetlands, and native resident or migratory wildlife species movement would also be less than significant with implementation of 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures. Development under the 2005 LRDP would be in conformance with local policies protecting biological resources and would not conflict with an adopted habitat conservation plan or natural community conservation plan.

Although the magnitude of development under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built, and the development of the Campus Reserve site would not occur, the biological resource impacts under the 2005 LRDP (i.e., No Project Alternative) would generally be the same as the less than significant impacts under the proposed project because the Campus Reserve site does not support any sensitive biological resources.

Cultural Resources

Cultural resources impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that impacts resulting from modification of structures eligible for listing on the National or California Registers would be less than significant with implementation of 2005 LRDP Planning Strategies and Mitigation Measures. Impacts resulting from demolition of historic or potentially historic structures would remain significant and unavoidable with implementation of 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures. Impacts related to damage to previously unknown archaeological or paleontological resources, or the

disturbance of human remains, would be less than significant with implementation of 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures.

Although the magnitude of development under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built, and the development of the Campus Reserve site would not occur, the cultural resource impacts under the 2005 LRDP (i.e., No Project Alternative) would be the same as the impacts under the proposed project because the Campus Reserve site does not contain any known cultural resources nor is it sensitive for such resources.

Geology and Soils

Impacts related to geology and soils resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that impacts related to effects from seismic ground shaking, excavation of soils, unstable soils, and expansive soils would be less than significant with implementation of 2005 LRDP Planning Strategies and Programs and Practices.

Although the magnitude of development under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built, and the development of the Campus Reserve site would not occur, the geology and soils impacts under the 2005 LRDP (i.e., No Project Alternative) would generally be the same as the less than significant impacts under the proposed project because the Campus Reserve site does not contain any unique geologic or soil conditions.

Hazards and Hazardous Materials

Impacts related to hazards and hazardous materials resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that impacts related to exposure to hazards due to the routine transport, use, disposal, or storage of hazardous materials; the exposure to health or safety risks through renovation or demolition of buildings, an accidental release, or through contaminated soil or groundwater would be less than significant with implementation of the relevant Programs and Practices and Mitigation Measures. Potential impacts under the 2005 LRDP related to the handling of hazardous materials would be less than significant with the implementation of the relevant Programs and Practices. The 2005 LRDP would not result in construction on a listed hazardous materials site and this impact is less than significant. Implementation of the 2005 LRDP could interfere with an adopted emergency response or emergency evacuation plan, but the impact would be less than significant with implementation of 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures. Development in the southeastern potion of the campus could expose

people or structures to wildland fires, but the impact would be less than significant with implementation of the relevant 2005 LRDP Planning Strategies and Mitigation Measures.

As the magnitude of development under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built, and the development of the Campus Reserve site would not occur, the hazards and hazardous materials-related impacts under the 2005 LRDP (i.e., No Project Alternative) would be slightly reduced compared to the proposed project's less than significant impacts.

Hydrology and Water Quality

Hydrology and water quality impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that impacts related to violating water quality standards, depleting groundwater supplies, altering drainage patterns, and exceeding storm drain capacity would be less than significant with implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices. Implementation of the 2005 LRDP would not require the construction of new stormwater drainage systems or otherwise substantially degrade water quality and the impact would be less than significant. Implementation of the 2005 LRDP would not place housing or other structures within a 100-year flood hazard area with implementation of the relevant Programs and Practices and Mitigation Measures and the impact would be less than significant. Implementation of the 2005 LRDP also would not expose people or structures to significant risk or loss, injury, or death involving flooding, seiche, tsunami, or mudflow with implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices.

As the magnitude of development under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built, and the development of the Campus Reserve site would not occur, the hydrology and water quality-related impacts under the 2005 LRDP (i.e., No Project Alternative) would be slightly reduced compared to the proposed project's less than significant impacts.

Land Use

Land use impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that changes in on-campus land use associated with the 2005 LRDP could be substantially incompatible with existing adjacent land uses, but with implementation of 2005 LRDP Planning Strategies and Programs and Practices, impacts would be less than significant. Implementation of the 2005 LRDP could conflict with an applicable land use plan, policy, or regulation, but this impact would be less than significant with implementation of 2005 LRDP

Planning Strategies, Programs and Practices, and Mitigation Measures. Development under the 2005 LRDP would not conflict with an adopted habitat conservation plan or natural community conservation plan, and no impact would result.

Although the magnitude of development under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built, and the development of the Campus Reserve site would not occur, the land use impacts under the 2005 LRDP (i.e., No Project Alternative) would generally be the same as the less than significant land use impacts under the proposed project.

Noise

Noise impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that with implementation of the relevant 2005 LRDP Planning Strategy and Programs and Practices, campus development under the 2005 LRDP would not expose on-campus residential uses to noise levels exceeding the state standards. The 2005 LRDP construction could expose persons on campus to excessive groundborne vibration and groundborne noise levels, which would be a significant and unavoidable impact even with implementation of the relevant Programs and Practices and Mitigation Measures. However, groundborne vibration levels for persons off campus and resulting from operation of facilities would be less than significant. Implementation of the 2005 LRDP would increase local traffic volumes, but with implementation of the relevant Programs and Practices it would not cause a substantial permanent increase in noise along affected roadways and the impact would be less than significant. New stationary source noise could cause a permanent increase in ambient noise levels, but the impact would be less than significant with implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices. The 2005 LRDP construction could result in temporary significant and unavoidable increase in ambient noise levels even with implementation of the relevant Programs and Practices. Implementation of the 2005 LRDP could also result in periodic increases in ambient noise levels due to special events, but this impact would be less than significant.

Although the magnitude of development under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built, and the development of the Campus Reserve site would not occur, the noise impacts under the 2005 LRDP (i.e., No Project Alternative) would generally be the same as the noise impacts under the proposed project.

Population and Housing

Population and housing impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that impacts related to population growth inducement, increased demand for housing, displacement of existing residents, and construction of replacement housing would be less than significant with implementation of 2005 LRDP Planning Strategies.

The magnitude of development and associated campus population under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built, the daytime population of the campus would be 35,540 persons in 2015/16, compared to 41,393 persons in 2020/21 under the proposed project, and the development of the Campus Reserve site would not occur, the population and housing impacts under the 2005 LRDP (i.e., No Project Alternative) would only be slightly reduced compared to the proposed project's less than significant impacts.

Public Services

Public services impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that impacts related to the provision of fire protection, police protection, schools, and libraries would be less than significant with implementation of 2005 LRDP Planning Strategies and Programs and Practices.

As the magnitude of development and associated campus population under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built and the development of the Campus Reserve site would not occur, the public service impacts under the 2005 LRDP (i.e., No Project Alternative) would be slightly reduced compared to the proposed project's less than significant public service impacts.

Recreation

Recreation impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that impacts related to increased demand for recreational space, construction of recreational facilities, and the conversion of recreational fields to non-recreational uses would be less than significant with implementation of the relevant 2005 LRDP Planning Strategies.

Although the magnitude of development and associated campus population under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built and the development of the Campus Reserve site would not occur, the impacts on recreation under the 2005 LRDP (i.e., No Project Alternative) would generally be the same or slightly reduced compared to the proposed project's less than significant recreation impacts.

Transportation and Traffic

Transportation and traffic impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that impacts related to increased traffic volumes and construction-related vehicle trips would be significant and unavoidable even with implementation of 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures. Implementation of the 2005 LRDP would also exceed established levels of service designated by the Riverside County Congestion Management Program, which would be a significant and unavoidable impact. Impacts related to design feature hazards, short-term vehicular hazards due to roadway closure, or pedestrian hazards due to sidewalk closure during construction would be less than significant with implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices. Implementation of the 2005 LRDP would not impair long-term emergency access with implementation of the relevant 2005 LRDP Planning Strategy. Implementation of the 2005 LRDP could impair short-term emergency access during construction, but this impact would be less than significant with implementation of the relevant Programs and Practices. Implementation of the 2005 LRDP would not result in inadequate parking capacity with implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices and the impact would be less than significant. Increased demand for parking in areas adjacent to the campus and temporary elimination of on-campus parking during construction would be a less than significant impact with implementation of the relevant 2005 LRDP Planning Strategies and Mitigation Measures. Implementation of the 2005 LRDP would not conflict with policies, plans, or programs supporting alternative transportation and the impact would be less than significant with implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices. Increased demand for public transit would be reduced to a less than significant level with implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures.

As the magnitude of development and associated campus population under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built, and the development of the Campus Reserve site would not occur, the impacts on traffic and transportation under the 2005 LRDP

(i.e., No Project Alternative) would be reduced by about 15 percent compared to the traffic impacts under the proposed project but would still be significant. The impacts on study freeways would also be reduced but still significant and unavoidable.

Utilities

Utilities impacts resulting from growth under the 2005 LRDP (i.e., No Project Alternative) were analyzed in the 2005 LRDP EIR. The 2005 LRDP EIR determined that impacts related to the construction of water treatment facilities and wastewater conveyance systems, additional demand for water and electricity, the generation of solid waste and wastewater would be less than significant with implementation of 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures. Implementation of the 2005 LRDP would also comply with applicable regulations related to solid waste and the impact would be less than significant. Development under the 2005 LRDP would not exceed wastewater treatment requirements or result in wasteful use of energy with implementation of the relevant 2005 LRDP Planning Strategy and Program and Practice, and the impacts would be less than significant.

As the magnitude of development and associated campus population under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because the 3.1 million square feet of building space associated with the medical school would not be built, and the development of the Campus Reserve site would not occur, the impacts on utilities under the 2005 LRDP (i.e., No Project Alternative) would be reduced by 15 to 20 percent compared to utility impacts under the proposed project.

Greenhouse Gas Emissions

Impacts related to greenhouse gas (GHG) emissions resulting from growth under the 2005 LRDP (i.e., the No Project Alternative) were not evaluated in the 2005 LRDP as the EIR predates the emergence of GHG emissions as an environmental concern.

As the magnitude of development under the 2005 LRDP (i.e., No Project Alternative) would be smaller compared to the proposed project because 3.1 million square feet of building space associated with the medical school would not be built and the campus daily population would also be smaller, the GHG emissions under the 2005 LRDP (i.e., No Project Alternative) would be lower by about 12 percent compared to the proposed project's GHG emissions. The GHG emissions under the No Project Alternative would be about 257,789 $MTCO_2e$ compared to 293,249 $MTCO_2e$ under the proposed project. This would further reduce the proposed project's less than significant impact.

Ability to Accomplish Project Objectives

The No Project Alternative (continued development of the campus under the 2005 LRDP) would not achieve any of the project objectives. A school of medicine would not be developed under this alternative, and therefore it would not allow UCR to serve the medical needs of the Inland Empire surrounding the Riverside campus. This alternative would also not allow the Campus to redistribute parking around the West Campus academic core without which the Campus would not be able to establish a pedestrian link between East and West Campuses. The benefits from a better designed open space area on the West Campus would also not be achieved.

6.5.2 Alternative 2: Reduced School of Medicine

Description

Under this alternative, the SOM would be constructed at the same site as the proposed project, but a portion of the development program envisioned for the SOM would not be developed. Specifically, the medical office buildings included in the proposed project would not be developed. As a result, the reduced SOM would have approximately 2.3 million gsf of building space and a population of approximately 3,450 students, doctors, researchers, patients, and visitors, amounting to a 26 percent reduction in building space and a 45 percent reduction in population as compared to the proposed project.[1] With a 26 percent reduction in building space, the SOM footprint would be proportionally reduced from 38.7 acres under the proposed project to approximately 28.6 acres under this alternative. Other elements of the proposed Amendment 2, including the changes to the locations of the West Campus future parking structures and the changes to the West Campus major open space from a Grove concept to the Gage Canal Mall concept would remain unchanged under this alternative.

Impact Analysis

Aesthetics

This alternative would allow for the development of a reduced SOM by eliminating the medical office buildings. Therefore, less construction activity would be involved for this alternative. Similar to the proposed project, this alternative would not substantially degrade the visual character or quality of the campus and its surrounding areas with implementation of the 2005 LRDP Planning Strategies and continued implementation of campus Programs and Practices. As this alternative would result in less

1 The medical office buildings would account for 775,000 gsf of building space and approximately 2,800 employees under the proposed project.

construction and a reduced development footprint, it would somewhat reduce the less than significant aesthetic impacts as compared to the proposed project. The cumulative impact would be less than significant, similar to the proposed project. No new or increased visual resource impacts are anticipated under this alternative.

Agricultural Resources

The Reduced SOM alternative would result in the conversion of approximately 28.6 acres of Important Farmland to non-agricultural uses as compared to the conversion of approximately 37.3 acres (Campus Reserve site) under the proposed project – this is because with the reduced land needs of the SOM, only about 28.6 acres of other planned land uses would be relocated to the Campus Reserve site. While this alternative would reduce the magnitude of the impact to Important Farmland, the remaining 8.7 acres on the Campus Reserve site would no longer be viable for agricultural research. Therefore in essence, this alternative would effectively have the same impact on Important Farmland as the proposed project. Similar to the proposed project, this alternative would make a cumulatively considerable contribution to the conversion of farmland.

Air Quality

The decreased building space associated with the Reduced SOM Alternative would result in reduced construction-related impacts associated with campus development. The proposed project would exceed the air district's project level thresholds for NO_x during construction; construction emissions under the proposed project would result in a significant and unavoidable air quality impact that would also be cumulatively considerable. This alternative would reduce the impact but not to a less than significant level because the medical office buildings that are excluded under this alternative are a relatively small part of the total campus development through year 2020.

Operational emissions would result in a potentially significant air quality impact under the proposed project. Although these emissions would be reduced under the Reduced SOM Alternative, they would not be reduced to a level that would render the impact less than significant.

With respect to toxic air contaminants, the Reduced Growth Alternative would decrease the number of buildings that would involve hazardous materials use or require generators and cooling towers such that the overall toxic air contaminants associated with the alternative would be lower than the proposed project. No new or increased air quality impacts are anticipated under this alternative.

Hazards and Hazardous Materials

The elimination of the medical office buildings would reduce the amount of hazardous materials use and handling under this alternative compared to the proposed project by a small amount, resulting in a small reduction in impacts associated with hazardous materials use on the campus. The Reduced SOM Alternative would also result in a smaller on-campus population, and similar to the proposed project, the impacts from exposing people to hazards would be less than significant. All other hazardous material impacts would remain unchanged under this alternative. No new or increased hazards or hazardous materials impacts are anticipated under this alternative.

Hydrology and Water Quality

The proposed project would result in less than significant with respect to all hydrology and water quality issues, including water quality impacts and groundwater deficits. The Reduced SOM Alternative would slightly reduce the area of new impervious surfaces in comparison to the proposed project, which would reduce the runoff-related impacts. No new or increased hydrology and water quality impacts are anticipated under this alternative.

Land Use

This alternative would not result in any changes to the land use impacts as analyzed for the proposed project because the Reduced SOM Alternative would be developed on the same site, and for reasons presented above under Agricultural Resources, the Campus Reserve site would also be eventually fully developed. No new or increased land use impacts are anticipated under this alternative.

Noise

The proposed project would result in significant noise impacts from construction and vibration sources. All other noise impacts under the proposed project would be less than significant. Under the Reduced SOM Alternative, there would be less building space constructed. Therefore, the noise impacts related to construction noise and vibration sources would be incrementally reduced under the alternative. However, like the proposed project, construction noise impacts would not be reduced to less than significant under this alternative. The operational noise impacts of this alternative would be somewhat reduced as compared to the proposed project because there would be a reduction in vehicular noise on account of the smaller population associated with this alternative. These impacts would remain less than significant. No new or increased noise impacts are anticipated under this alternative.

Population and Housing

As discussed above, the population associated with this alternative would be reduced by approximately 45 percent as compared to the proposed project, and would therefore result in lower population growth. The population and housing impacts would be further reduced and would remain less than significant. No new or increased population and housing impacts are anticipated under this alternative.

Public Services

This alternative would further reduce the less than significant impacts related to the provision of fire and police protection services associated with the proposed project because it would have a smaller population. Similar to the proposed project, this alternative would not contribute to a need for the provision of new or altered fire or police protection facilities. No new or increased public services impacts are anticipated under this alternative.

Transportation and Traffic

The Reduced SOM Alternative would result in a reduced impact, in comparison to the proposed project, on intersections and roadways, which would be proportional to the decrease in the campus population. However, as under the proposed project, these impacts would continue to be significant and unavoidable under this alternative. Even though the medical office buildings would account for 65 percent of the SOM trips generated during the AM peak hour and 74 percent of the PM peak hour trips[2], the trip reductions would not be adequate to reduce the impacts at the affected intersections. Similarly, the impacts on study freeways would be reduced but still significant and unavoidable.

Construction-related vehicle trips could also result in a significant and unavoidable impact under this alternative because, even with the reduced SOM, future construction projects on the *SOM* site could overlap with other projects on the West Campus, creating the potential for impacts at intersections and haul routes in proximity to construction sites. All other traffic impacts under the alternative would be less than significant, similar to the project.

2 The medical office buildings would account for 1,481 out of the 2,277 trips generated by the proposed SOM during the AM peak hour, and 2,962 out of the 3,992 trips generated during the PM peak hour.

Utilities

This alternative would further reduce the less than significant impacts related to the provision of utilities associated with the proposed project because it would have a smaller population and building space. Similar to the proposed project, this alternative would contribute to a need for the provision of new or altered utilities but the contribution would be smaller. No new or increased utility impacts are anticipated under this alternative.

Greenhouse Gas Emissions

Implementation of the proposed project would generate greenhouse gas emissions, either directly or indirectly. However, the impact would be less than significant. The Reduced SOM Alternative would result in less development in comparison to the proposed project as the medical office buildings (about 0.8 million gsf of building space) would not be developed and there would be a slightly reduced daily population on the campus under this alternative. As a result, this alternative would result in slightly reduced greenhouse gas emissions - about 4 percent less than the proposed project. Therefore the alternative would reduce the project's less than significant impact.

Ability to Accomplish Project Objectives

The Reduced SOM Alternative would meet the UCR objectives of providing a site for a school of medicine at a location on the West Campus that minimizes travel between East and West Campuses and is easily accessible to the Riverside community and the Inland Empire. It would also allow for the improved location of future West Campus parking structures and an improved concept for West Campus major open space. However, as SOM development would be reduced compared to the proposed project, the SOM program needs would not be fully met and the objective of using the West Campus land base efficiently would not be achieved to the same extent. Elimination of the medical office building portion of the proposed project precludes the ability of the SOM to respond to anticipated development of outpatient clinical enterprises closely associated with the School. UCR's SOM is predicated on a "distributed" operational model for in-patient care through affiliation agreements with existing medical centers, hospitals, and clinics. As such, the ability to develop outpatient facilities adjacent and/or proximate to the SOM becomes critical for realizing the full spectrum of clinical care needs envisioned. Without the ability to develop medical office buildings, the SOM program would be significantly compromised.

6.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Table 6.0-1, Summary Comparison of Project Alternatives, presents a summary comparison of the alternatives with the proposed project with the purpose of highlighting whether the alternative would result in similar, greater, or lesser environmental impacts than the proposed project**.**

The No Project Alternative would avoid the significant environmental impacts of the proposed project related to agricultural resources because it would not result in additional conversion of Important Farmland. This alternative would therefore be the environmentally superior alternative. However, it would not meet any of the proposed project's objectives.

If the No Project Alternative is the environmentally superior alternative, *State CEQA Guidelines* Section 15126(d) (2) requires that an EIR identify an environmentally superior alternative from amongst the other alternatives evaluated in the EIR.

The Reduced SOM Alternative (Alternative 2) would not avoid the proposed project's significant impacts but would slightly reduce them. As this alternative would meet most of the project's objectives and reduce the magnitude of the impacts, it would be the environmentally superior alternative.

Table 6.0-1
Summary Comparison of Project Alternatives

	Proposed Project Impact (Significant Before Mitigation)	No Project Alternative	Reduced SOM Alternative
4.2-1	Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies, would result in the conversion of approximately 37.3 acres of Prime Farmland to nonagricultural uses. The impact would be significant.	--	=/--
4.2-2	Cumulative development, including the proposed 2005 LRDP Amendment 2, would convert Prime Farmland to non-agricultural uses. The contribution of the amended 2005 LRDP to this cumulative impact would be cumulatively considerable.	--	=/--
4.3-1	Construction projects under the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in construction emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation. The impact would be significant.	=/--	=/--
4.3-2	Operation of the campus under the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would result in operational emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. The impact would be significant.	=/--	=/--

	Proposed Project Impact (Significant Before Mitigation)	No Project Alternative	Reduced SOM Alternative
4.3-6	Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would conflict with or obstruct implementation of the applicable air quality plan. The impact would be significant.	=/--	=/--
4.3-7	Implementation of the proposed 2005 LRDP Amendment 2 would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard. The impact would be significant.	=/--	=/--
4.10-2	Construction associated with the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, could generate and expose persons on campus to excessive groundborne vibration or groundborne noise levels. The impact would be significant.	=/--	=/--
4.10-7	Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in substantial temporary or periodic increases in ambient noise levels at locations on campus. The impact would be significant.	=/--	=/
4.10-8	Construction associated with the proposed 2005 LRDP Amendment 2, which includes relevant Programs and Practices, could result in substantial temporary or periodic increases in ambient noise levels at locations off campus. This impact would be significant.	=/--	=/--
4.14-1	Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service under 2020 conditions. The impact would be significant.	=/--	=/--
4.14-2	Implementation of the proposed 2005 LRDP Amendment 2, which includes relevant 2005 LRDP Planning Strategies and a Program and Practice, would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service under existing conditions. The impact would be significant.	=/--	=/--
4.14-5	Implementation of the proposed 2005 LRDP Amendment 2, which includes a relevant Program and Practice, would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. The impact would be significant.	=/--	=/--
4.14-6	Implementation of the proposed 2005 LRDP Amendment 2 would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under 2020 conditions. The impact would be significant.	=/--	=/--

	Proposed Project Impact (Significant Before Mitigation)	No Project Alternative	Reduced SOM Alternative
4.14-7	Implementation of the proposed 2005 LRDP Amendment 2 would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under existing conditions. The impact would be significant.	=/--	=/--

KEY

= Impact similar to proposed project

-- Impact less than proposed project

+ Impact greater than proposed project

=/-- Impact slightly reduced but still significant

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